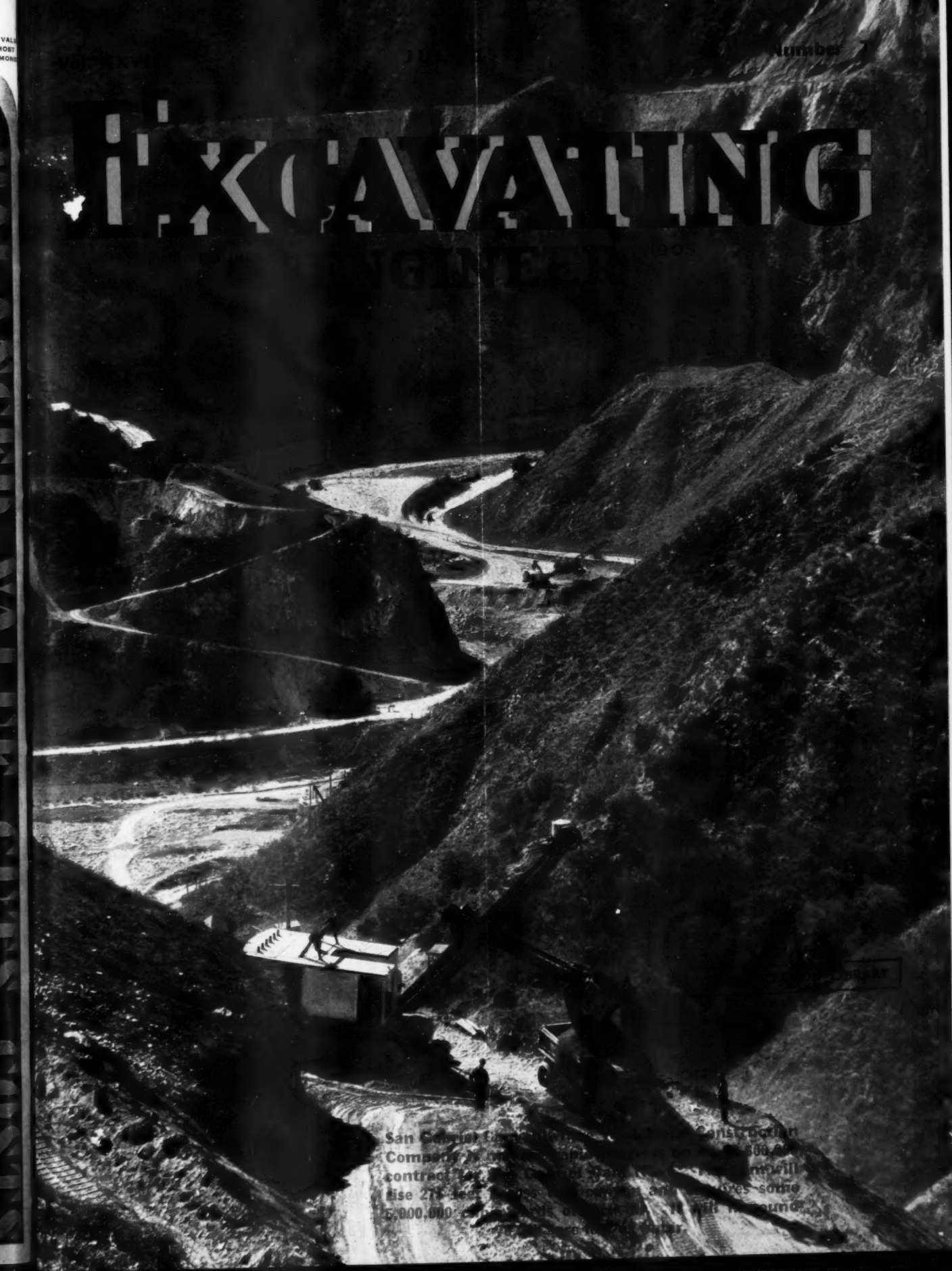
Number 7

EXCAVATING



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PUBLISHED MONTHLY BY
The Excavating Engineer Publishing Co.
SOUTH MILWAUKEE, WISCONSIN, U. S. A.

F. O. WYSE, *Managing Editor* — ARNOLD ANDREWS, *Editor* — E. M. HEUSTON, *Advertising Manager*

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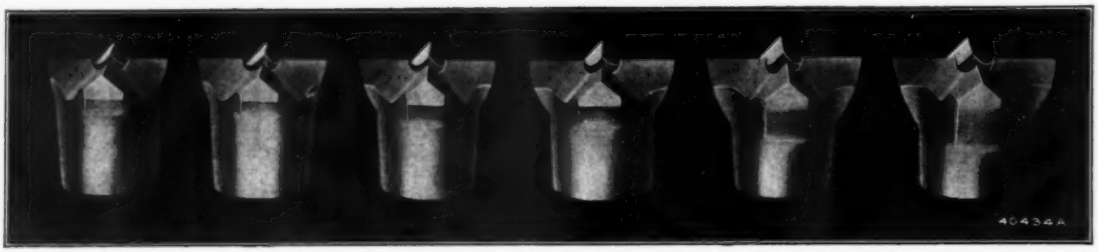

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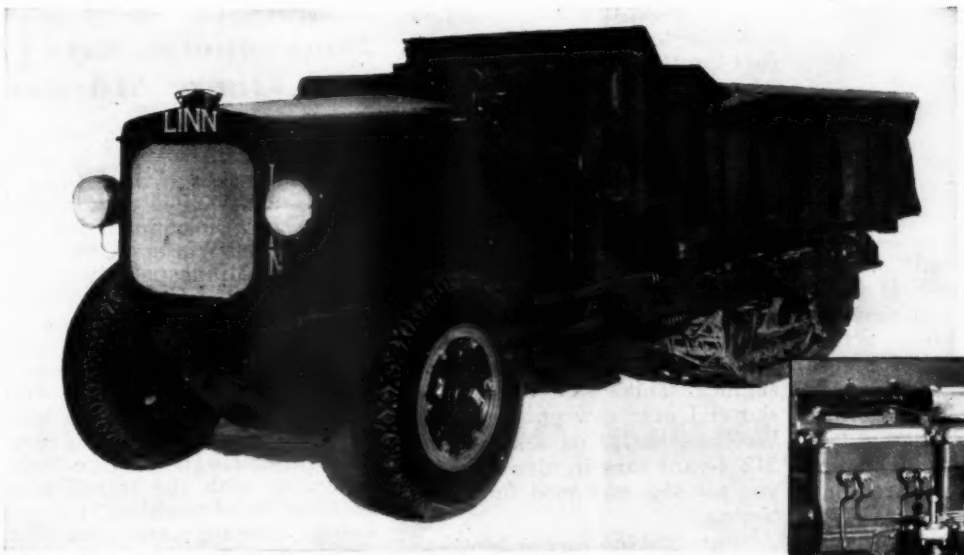

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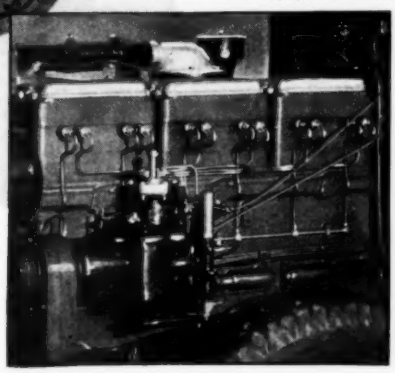

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Old Times & Old Timers

From Old Timer Donahue —27 years on one shovel job

OWEN E. DONAHUE of Portland, Colorado, has been on one shovel job with the Colorado Portland Cement Company for 27 years and, as he puts it, neither Old Timer Donahue or the job are done yet. Mr. Donahue sends us the accompanying pictures of one of the early Bucyrus shovels which they operated at the Colorado Portland Cement Company up until the time they got their first Bucyrus 70-C in 1912. The shop number of this old shovel was number 112 and it was built in Bucyrus, Ohio, in the summer of 1890. It was shipped in September of that year to the Citizens Water Company at Denver, Colorado.

The shipping records in the office of the Bucyrus-Erie Company show that this machine was equipped with a 50-inch boiler, hoist chain 7/8 inch by 100 feet of iron; swinging chain 3/4 inch by 39 feet and 41 feet. The crane standard length was given as "18 feet, size 10-inch iron". The dipper is specified as 1 3/4 yards and the lift as 10 feet 6 inches. One of Mr. Donahue's pictures looking at the shovel from a quartering front view shows the machine as it was first used by the Colorado Portland Cement Company with the thrust operated by the hoist chain. Later a separate boom engine was applied and the other picture was taken after this change. Says Old Timer Donahue:

"We got it (the Bucyrus 112) in Denver second hand in about 1908 and used it for stripping shale for some time. We later put it in the shale quarry where it handled the work up until about 1912 when it was retired to make room for the Bucyrus 70-C which we are still using. Old 112 stood idle for about two years and then was sold to the junk man except for the trucks which we still have. They were 42-inch guage and we cut them down to 36-inch for our track. The wheels are stamped 'Peninsular Car Works, Detroit, Michigan, 1884'. The power for crowding was taken from the hoist chain through sprockets and a clutch. There was only one engine for all three operations, hoist, swing and crowd. However, when we put it in the shale we put on a crowd engine. This was the fastest shovel I ever saw on the swing. We have loaded out as many as 212 4-yard cars in nine hours so you see she was good for an old timer.

"I am looking forward to hearing through your interesting Old Timers section from some other old time shovel men as to their experiences."

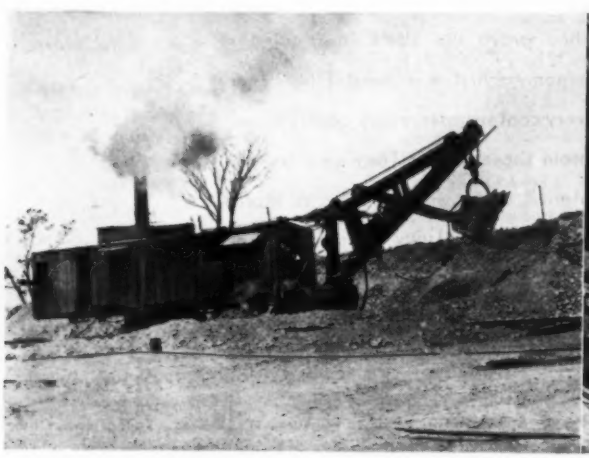
Thank you Old Timer Donahue. Twenty-seven years on one shovel job is certainly a record to be proud of. We note that the old 112 served from 1890 to 1912 or over a period of twenty-two years. The Bucyrus 70-C which succeeded it and is still in service will "die of age" this Fall with a service record of twenty-one years.

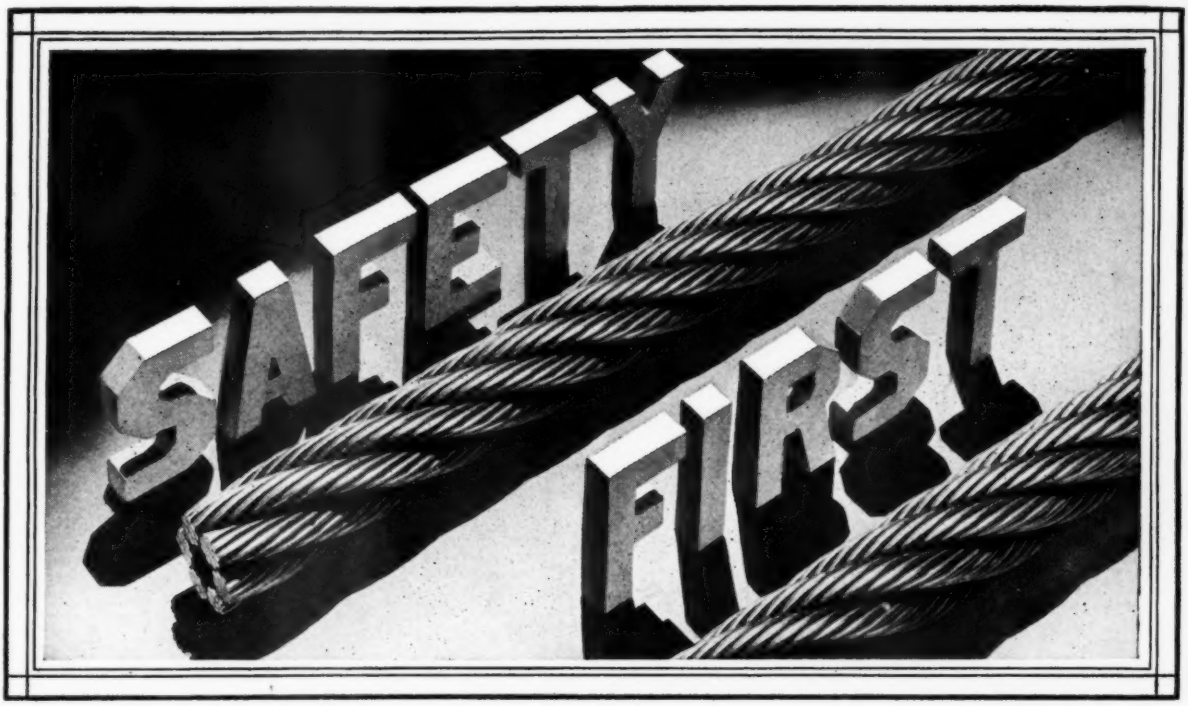
Speaking for the Old Timers we wish good luck to Mr. Donahue and his 70-C and may they have many another happy and successful year on their present job.

Kilgore from Minneapolis, Says Old Timer Morgan

WITH reference to your article on the "Old Timers" page concerning of the "Kilgore" shovel—about 1904 my brother who was a machinist for the Petler Car Works, University Ave. S.E., Minneapolis, was sent out to help overhaul a Kilgore shovel or ditching machine of this type on one of Minnesota's drainage jobs; draining swamp land. The Petler Car Works were builders of contractors dump cars for many years and about 1905 it became the Kilgore-Petler Company with the intention of building these machines. I do not know whether any machines were actually built by the new company, as I got out of touch with them about that time. Later I think the old company name of Petler Car Works was resumed."

Thank you, Mr. Morgan. Are there other unusual machines you Old Timers would like to have described?





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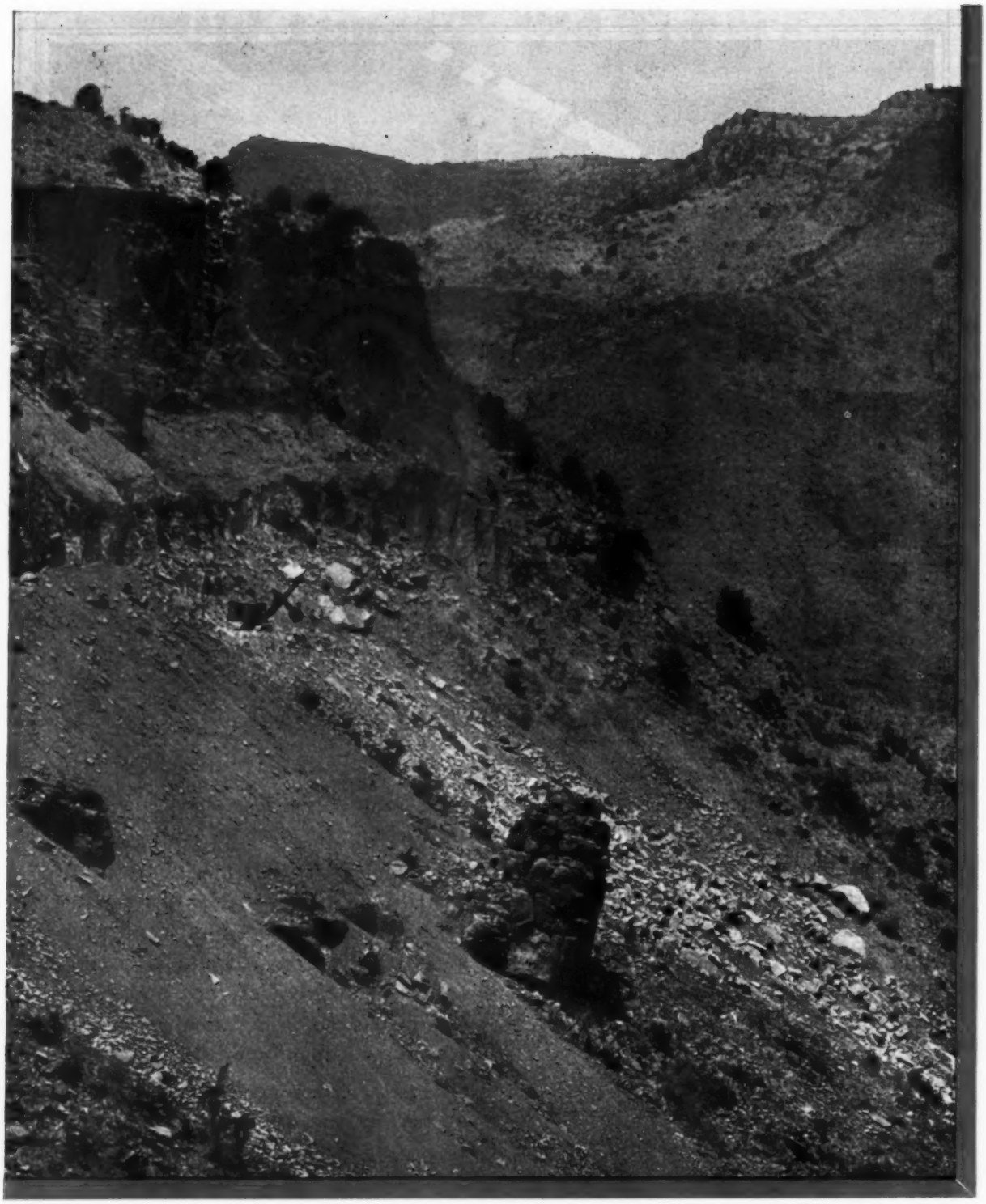


This Scenic Short Cut Saves 100 Miles on Transcontinental Highway

Considerable side hill casting was possible on sections like this. The grandeur of this White Mountain scenery can be somewhat appreciated by noting the comparative size of 43-B shovel seen notching the new grade along the cliff at the left.

EXCAVATING ENGINEER
FOUNDED 1905

JULY, 1933
VOL. XXVII NO. 7

CUTTING Grade Through BLUE GRANITE of Arizona's White Mountains

Lee Moor Contracting Company, Ltd. builds difficult section of new Globe-Showlow Highway through magnificent scenic section.

By HAMPTON S. SMITH, Jr.

W. E. (Billy) Orr

IN THE HEART of the White Mountains of central Arizona is a short section of the Globe-Showlow Highway that has recently been completed by the Lee Moor Contracting Company of El Paso. Three miles of this section bend a crooked arm up through the picturesque National Forest; the balance climbs in a series of looping spirals and twists around a towering fortress of blue granite, boulder-studded and bristling with a vast army of cedar and pine. From the dizzy heights of the highway may be seen wide reaches of the fertile Salt River Valley, bisected by the slow-flowing silver stream, and picketed here and there by the tepees of the Apache Indians from the San Carlos reservation. The east end of the section lies at the headwaters of the Salt River, about 35 miles north of the Roosevelt dam and lake which impound the irrigation water for the agriculturists and ranchers living in the valley.

New route cuts 100 miles from U. S. 60

The 90-mile Globe-Showlow Highway is made up of four sections, two of which have already been completed; the west section by the contracting firm of Willis and Son of Los Angeles, and the east-central by Lee Moor Contracting Company. Contracts for the two now under construction were let to the firm of L. E. Dixon Company, Los Angeles.

When finished the Globe-Showlow Highway will connect U. S. 60 in the vicinity of Springerville, Arizona, and will cut 100 miles off the transcontinental roadway by eliminating the long and rough detour to Globe via Hilltop and San Carlos, Arizona. The new route will traverse by the most direct route possible the sublimest scenic mountain section of Arizona.

Where many cuts run as deep as 80 to 120 feet

The 11.6-mile section of the Globe-Showlow Highway con-

Through country like this the Lee Moor Contracting Company, Ltd., pushed through this difficult road job. A bit of the road can be seen at the lower left.

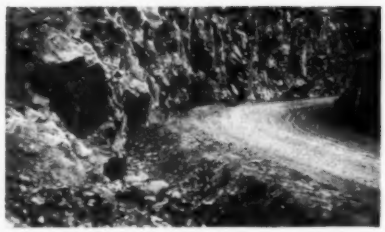
Rocks like this were frequently encountered and easily handled by the husky Bucyrus-Erie.

structed by the Lee Moor Contracting Company, offered a very serious problem in highway building due to the rugged and precipitous nature of the mountain terrain over which it was located. The material encountered on the grading is commonly known as Diabase or blue granite. Some of it was in a partial state of disintergration, but for the most part it was found to be extremely hard. At many points large boulder formations of Diabase were encountered, and, on the east end of the project the line ran counter to a high bluff formation, necessitating cuts in many instances from 80 to 120 feet in depth and drill holes down to 30 feet.

Work on the schedule was started July 1, 1931 under the supervision of W. E. (Billy) Orr, superintendent of construction for Lee Moor Contracting Company. It might be said in passing that Billy Orr has been engaged in Highway and railroad construction work for the past 30 years, both in the United States and in Mexico, and has few equals in the ability to put "road harness" on wild terra firma.

600,000 yards of material, 80 percent rock

Early on that July morning the Indians of the San Carlos reservation were aroused by the sound of picks and shovels clinking in the primeval gorges and hillsides of the White Mountains; jackhammers began singing their staccato song of labor; the rocky defiles began to peal and reverberate with the thunder of dynamite charges tearing out chunk after chunk of refractory rock. A section of highway was being built; the hand of man had reached forth and was fettering the long untamed mountains with a band of civilization.



Sheer walls of solid granite made this cut one of the toughest on the job.

Although the section, as already stated, was only 11.6 miles in length, approximately 600,000 yards of material was moved. And, as 80 per cent of this was solid granite, it is easy to see that explosives played a major part in breaking it up.

The brunt of the drilling was borne by ten L-6 Sullivan jackhammers and for holes requiring a maximum depth of 30 feet T-5 Sullivan drifters were used. Approximate depth of drill holes was 25 feet. A 2-inch pipeline was laid along the job at the upper end with convenient outlets for air, which was furnished by Ingersoll-Rand and Sullivan compressor units.

Hercules 40 per cent dynamite, straight Herculite bag powder, and Triple F blasting powder were the explosives that made little rocks out of the big ones. Charges were set off by Herculite electric blasting machines.

The 43-B caught in the act of grabbing a mouthful of granite.

The hauling was handled by three Model 58 White trucks, 4-yard capacity, and three Internationals of 5-yard capacity. Side casting was facilitated by the considerable amount of side-hill work encountered.

Shovels move in over "impassable" trails

One month after construction work started a 43-B Bucyrus-Erie and a D-2 Diesel shovel were "introduced" on the job. Both shovels were unloaded from a Southern Pacific freight at San Carlos, Arizona, and brought to the job (a distance of 40 miles) on their own power.

"The trip," Superintendent Orr states, "was a remarkable feat for machines of this size. They

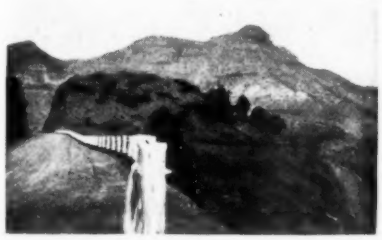
Plenty of cutting and plenty of filling were necessary at this particular section.

made a climb of 4500 feet during the first 20 miles over a route that would have been practically impassible for any type of vehicle. The roughest and steepest portion of the ascent was negotiated over the eight-mile stretch from Cosodor Springs to Sawmill Summit, the last named having an elevation of 6500 feet."

From Sawmill Summit to the scene of operations—a distance of 19 miles—the route was downgrade. And what a route! A narrow, tortuous, steep-sloping dugway, deep-rutted by mountain torrents, glutted with granite boulders and defended on every side by close-growing stubby pine and cedar. At many points the dugway was too narrow to admit of passing, and on these occasions the lead shovel—the 43-B—was forced to leave the trail, and dig out a new one around the obstructed point. The 43-B was also called upon several times to clear a right-of-way through timber growing too closely together to permit of entrance. This it did right handily, smashing down good-sized trees with its powerful crowding mechanism, and, having laid them low, "boosted" them out of the way with its bucket.

"The trip was made in five days," Mr. Orr said. "And not a single repair was necessary as a result of the long, tough journey."

The shovels dug in immediately on arriving at the job, and, starting at the west end, were worked continuously through the entire section, operating for nine straight months on two, eight-hour shifts. And, of the 600,000 yards of material moved, their share was approximately 480,000. Four Caterpillar tractors, three 60's and one 30, together with 50 head of mules on Fresno scrapers were used to move the balance, 120,000 yards. Most of this material was accumulated when cuts were opened for the shovels, and from such cuts as were stripped on top of all loose material. Cut openings and stripping were handled by the foregoing equipment.



One of the "hairpin" turns on the section. In the background may be seen peaks of the White Mountains piled to the sky.

In the hard blue granite the Bucyrus-Erie 43-B "took them as they came" to win high praise.

Superintendent Orr gives high praise to 43-B

"The mobility of the 43-B was a source of continuous surprise to me," Mr. Orr declared. "It was not always practical to build pilot roads to move to the opposite end of a cut, and in some case, due to the steep bluff formations encountered, the digging of a pilot road was not to be considered. The problem then was to get the shovel in a position to distribute the blasted material without a pilot road to travel over. But the 43-B solved the problem by climbing up the steep sides to the top of such cuts, and "fishing" out the material from this point of vantage.

"In my opinion," Mr. Orr went on, "the 43-B is the greatest shovel in any near range of size that is manufactured today. Heretofore, shovels of this size have been too large and heavy for highway and similar work. But the ease with which this machine travels over any kind of grades, the absolute security of its digging and moving brakes, its powerful crowd, and many other practical features, make it an ideal machine for any kind of shovel work."

The rocky gorges roar, rocks fly, smoke rises in a dense cloud as a charge of Herculite 40% dynamite is set off.

New road a fast, safe highway

The section was completed November 15, 1932. Traversing as it does one of the heaviest mountain sections in Arizona it is of necessity comprised of a number of curves. However, as all are

(Continued on Page 297)

The route of the 2,000-mile inland waterway which extends from Boston to Key West is shown on this map.

INLAND

Work Progresses Rapidly on Final Sections

By **FRANK A. MONTGOMERY, JR.**

WITH the recent opening of the sections of the Atlantic Intra-Coastal Way traversing the sounds and tidal flats along the North Carolina coast, the ultimate completion of this great canal has become but a matter of months. From South Carolina north to Boston, the canal has been completed, while from the Palmetto State southward to Miami and Key West, Florida, those sections which have not already been opened to traffic are under construction and are fast approaching completion.

Excavation handled by dredges

This 2000-mile inland water route from North to South, which will prove a great factor in reducing freight rates on certain commodities, has long been the dream of engineers and many private individuals. It was started in the latter part of the eighteenth century, but it has only been in the last thirty years, when the government took up the burden of construction, that much headway has been made.

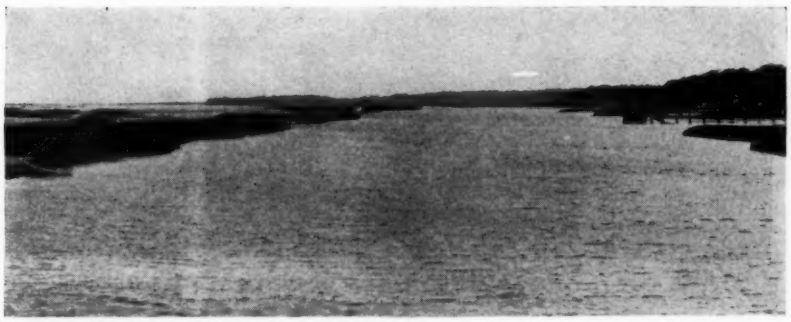
The finished parts of the waterway consist of canals dug by dredges operating for the most part through the sounds and marshes which line the eastern coast of the United States, but in several places, to shorten its length or to avoid too open stretches of water, the dredges have been forced to cut through high land. These land cuts, because of underlying ledges of rock, offered considerable complications at times. As a rule, however, where these strata were difficult to remove, the dredges worked by and dynamite was later used to loosen the rock so the channel could be deepened to the desired depth.

Throughout its length the government has placed lighted markers and other channel buoys, which have resulted in a waterway navigable both by night and day. This has been a great aid to the regular sailings of boat lines now using the canal.

Bottom 75 to 100 feet wide, 22 to 8 feet deep

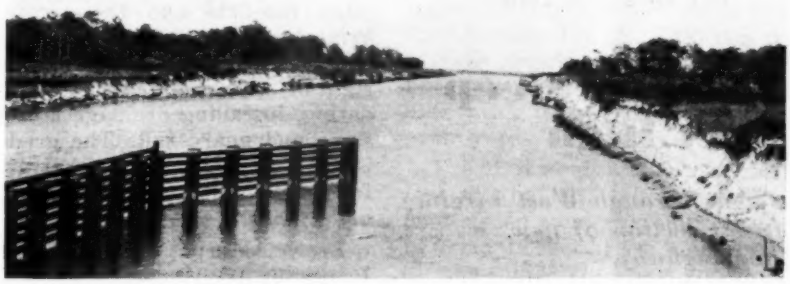
In depth the canal ranges from 22 feet to 8 feet, while the bottom width varies from 100 to 75 feet. In those sections where the artificial depth is less, engineers

WATERWAY approaches completion



Right: The waterway runs close in at this point. The depth on this section is 12 feet, with a bottom width of 90 feet.

Below: View of a land cut, near Carolina Beach, North Carolina. The waterway at this point was dredged to a depth of 12 feet, but currents have deepened the original 12 to about 20 feet.



claim that tides higher than ordinary will bring the average up considerably. The top width of the canal will average approximately 300 feet throughout its length.

There are, at present, several sections of the waterway to be deepened, mainly those parts which run through coastal Georgia and Florida, but these are navigable to a certain extent even now.

Work handled by contract

Construction of the various sections of the waterway has been carried on by various private dredging companies, although the Federal government has itself offered acceptable bids for certain portions. The contracts have been let on the basis of cost per cubic yard of material to be removed, as a rule.

Numerous pleasure craft, as well as a number of freight boats, have been regularly utilizing the completed portions of the canal, especially from the Cape Fear River northward to New York. And, as the work of deepening and opening additional stretches of the canal is carried on, it is expected this traffic will increase for the attractions of a sea-level canal, fully protected from the perils of ocean storms by long lines of barrier beaches and salt marshes, are not to be denied.

No definite date for the ultimate completion of the waterway has been set, but the time is not far distant when an unbroken, reasonably deep waterway will extend from Boston, Massachusetts, to Key West, on the southernmost tip of Florida.

Five and one-half million yards moved in 1932

During 1932 the following contractors worked on the waterway:

	cu. yds. removed
Arundel Corporation	3,642,194
Lukens Dredging & Cont. Corp.	204,219
R. C. Huffman Construction Co.	1,653,009

Other than the above work little was done on the Inland Waterway during 1932, but this little has served to complete the waterway almost to Winyah, South Carolina, from which point southward work is getting underway rapidly.

NIGHT AT THE PRINCESS PAT

By Andy

The day is done and night begun,
'Tis Nature's time for sleep;
But there is no sleep at Princess Pat
Where iron lies buried deep.

A great dark void of jet black space
With headlights weaving by,
White plumes of steam, black plumes of smoke,
And sparks thrown at the sky. . . .

The flame of torches, flare of fires,
And shining threads of steel
That mark the tracks that twist and turn
Beneath the clanging wheel. . . .

The hoot of whistle, clang of bell,
The hiss of loosened steam,
And trains of empties, trains of dirt,
Repassing like a dream. . . .

Huge dumps that loom against the sky,
Young mountains made by man,
With dinkies toiling up and up
As only dinkies can. . . .

Bright clustered lights where shovels roar
In never ending pain,
And shadowed shapes of shadow men
Who, cursing toil for gain. . . .

The day is done and night begun,
'Tis Nature's time for sleep;
But there is no sleep at the Princess Pat
Where iron lies buried deep.

A view of the big cut, showing two Euclid cars passing. The depth of the cut can be judged by comparing the height of the bank with the men in circle.

Where Cuts Go to 50 Feet Deep—Fills to 60 Feet High

Patsy Small & Company cut straight through West Virginia mountains to grade toughest section of new Bluefield-Princeton highway.

By V. I. CHIVAN

IN the southwestern corner of West Virginia, they are building a new highway between Bluefield and Princeton which will reduce the road distance from around 13 miles to 8¼ miles. That such a saving—nearly 35 per cent—is possible indicates that the existing road must be a wonder for curvature and that the new one is quite the opposite. Both assumptions are correct. When you drive the present highway, you have a suspicion that a pretzel bender had a hand in laying it out. Its winding course, anyone who knows his West Virginia, will understand. The region is extremely mountainous. The mountains aren't very large or very high but they are exceedingly numerous. The old roadbuilders dodged these elevations wherever possible and produced some masterpieces of crookedness.

The new highway was located under the modern rules and about all the attention the engineers paid to the mountains was to give them a Bronx cheer now and then. It was just too bad for those that got in the way, for the line has only two real curves and the sharpest of these is 10°. The road is designed to permit safe driving at 55 to 60 miles an hour, which means that there are no grades to speak of.

The estimated quantity of excavation is 515,000 cubic yards, and the indications are that the job will run considerably more than that. This, plus 10,000 cubic yards of borrowed material, will go into fills. The estimated overhaul is 985,000 station yards.

The construction is a Federal Emergency Project designed to alleviate unemployment. It is being carried on by the State Road Commission of West Virginia, under the direction of A. W. Paine, district engineer. J. B. Crockett is resident engineer. It is designated as Project E 200, and is divided into two sections, A and B, of which the first adjoins Bluefield and the second Princeton. The current work includes clearing and grubbing the right of way, grading and consolidating, installing drainage structures and guard rail. The grade is to be 30 feet wide. A contract for surfacing it with concrete will be let later.

Brown, Murphy & Wright of Princeton, W. Va., were low bidders on both sections and were awarded both contracts last November at a combined price of $230,276. They sub-contracted the grading in approximately equal sections among four firms, Patsy Small & Company of Bluefield; John A. Archer of Ivanhoe, Virginia; Marge & Blankenship

Looking over the top of a Euclid wagon at the Bucyrus-Erie 42-B in a deep cut in shale. The figure on the deck in puttees is Patsy Small.

of Shawsville, Virginia; and Rosenbaum Bros., of Pocahontas, Virginia. The installation of concrete structures was subbed to a fifth company, A. B. Peraldo & Son. The original contractors retained the item of installing 7,105 linear feet of 8-, 18-, and 24-inch corrugated iron pipe.

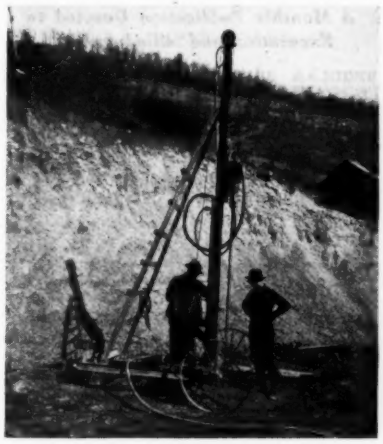
The two and one-half miles of grading at the Bluefield end is being handled by Patsy Small & Company of Bluefield. This contract calls for excavating 180,000 cubic yards of material, an average of 72,000 cubic yards to the mile. The work is the heaviest on the project. It involves cuts up to 50 feet deep and fills up to 60 feet high at the center line and 73 feet high from the lower outside edge.

All excavation is listed as unclassified, but this section of West Virginia is noted for its rock. The surface gives little indication of what is beneath it, but contractors are usually much surprised if the shovel dipper doesn't hit something hard within 15 minutes after it starts probing into a new cut. The nature of the rock varies greatly within short distances, which lends spice to the roadbuilder's lot. On the 8-mile line of this highway, there is limestone, sandstone and shale.

Patsy Small & Company started work at the biggest cut in the section under contract. In that area they put to work two Bucyrus-Erie steam shovels which had served them well on numerous past jobs. One is a 42-B which carries a 1½-cubic yard dipper. The other is a B-2 which uses a 1-cubic yard dipper. The big cut was on a sidehill and the material had to be moved back along the line to fill a deep ravine. The 42-B tackled the cut. The B-2 was moved just ahead of the cut section to a gulch where another fill was to be made. At this point the ground was swampy. It had been determined that the sogginess came from springs and that it would be necessary to get below the source of the water before starting the fill. This meant literally digging the springs out by their roots and involved the excavating with the B-2 of 10,000 cubic yards.

The 42-B went over the surface line of the cut, taking off the overburden to a maximum depth of about 10 feet at the high point of the hill. The clay top soil changed, with depth, to a resistant brown shale which occurred in thin beds uptilted almost to the vertical. The shovel didn't quit in this material, but it was apparent that time could be saved and the effective life of the machine lengthened if something was done to help it out. Accordingly, an Ingersoll-Rand wagon-mounted X-71 drifter drill was moved up ahead of the shovel. Two rows of holes, running with the road line and each row about 10 feet from either side, were

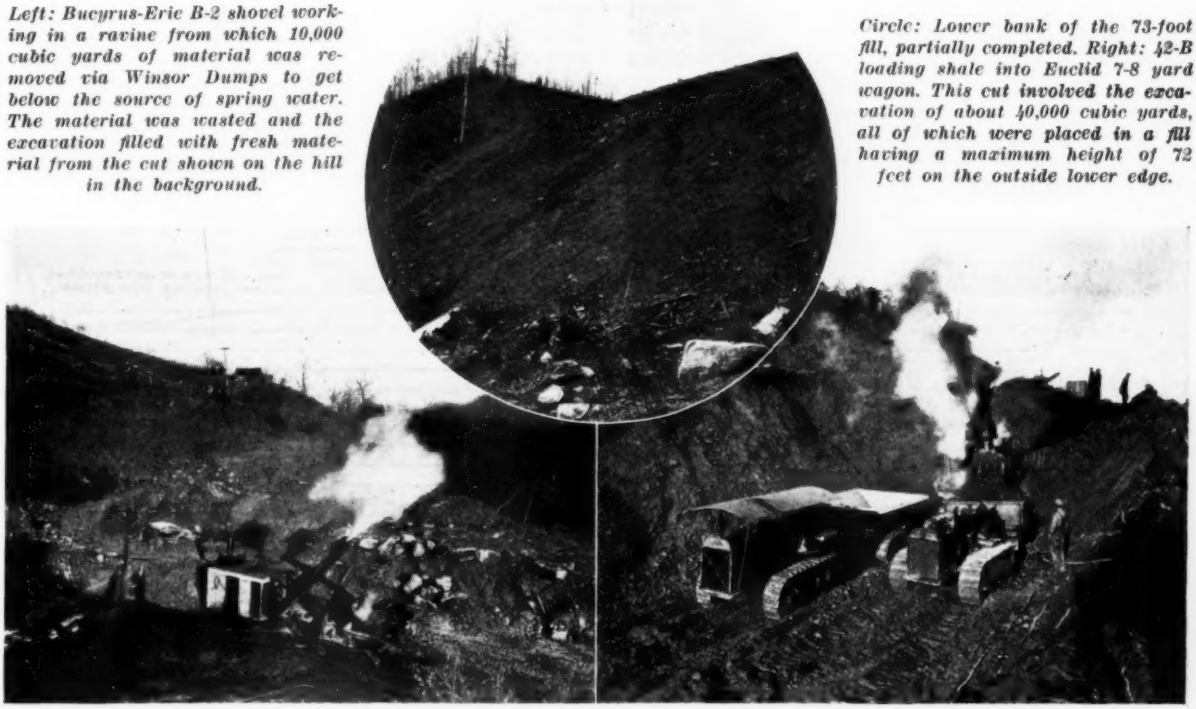
(Continued on Page 274)



Ingersoll-Rand Class D wagon drill with which drilling was done. The bank at the left shows excavation made by 42-B before drilling was started.

Left: Bucyrus-Erie B-2 shovel working in a ravine from which 10,000 cubic yards of material was removed via Winsor Dumps to get below the source of spring water. The material was wasted and the excavation filled with fresh material from the cut shown on the hill in the background.

Circle: Lower bank of the 73-foot fill, partially completed. Right: 42-B loading shale into Euclid 7-8 yard wagon. This cut involved the excavation of about 40,000 cubic yards, all of which were placed in a fill having a maximum height of 72 feet on the outside lower edge.



EXCAVATING ENGINEER

A Monthly Publication Devoted to Excavating and Allied Subjects

REGULAR SUBSCRIPTION: $1.00 a year; Canada, $2.00 per year. SPECIAL SUBSCRIPTION: Upon application on card inserted in this number, Excavating Engineer will be sent frequently (not regularly) free of charge. Only for those engaged in the industry of excavation.

The Excavating Engineer Publishing Co.
South Milwaukee, Wisconsin

F. O. WYSE
Managing Editor

ARNOLD ANDREWS
Editor

E. M. HEUSTON
Advertising Manager

Printed in U. S. A.

The Business Situation

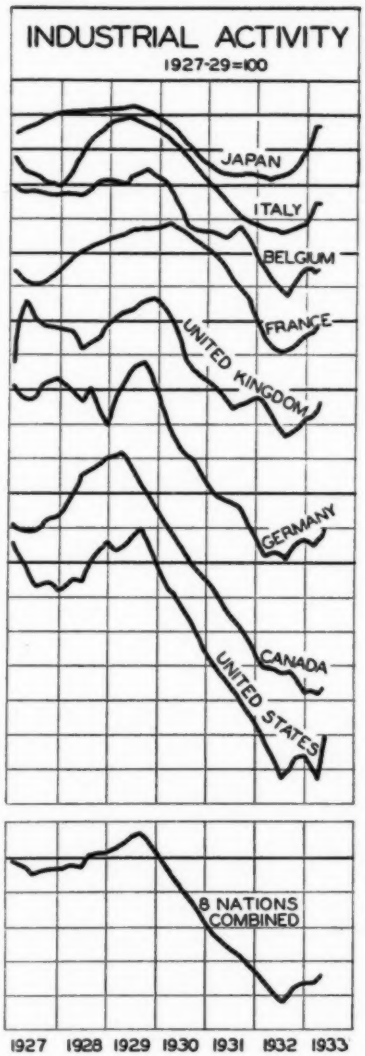
FOR MORE than three months now the United States has been enjoying improvement in commercial and industrial activity. It is only too natural for us to assume that the recovery we have been witnessing is due solely to the activities of our Federal Government and, perhaps, to overlook other factors that have been instrumental in aiding improvement.

The present administration has done a tremendous amount of constructive work and should be given credit for most of the improvement in the psychology of the nation—and psychology is one of the most important factors in business recovery. But there are dangers in the present program as well as the advantages. If we overlook the operation of other factors we increase the chance of over-estimating the effectiveness of the factors which are closest to us.

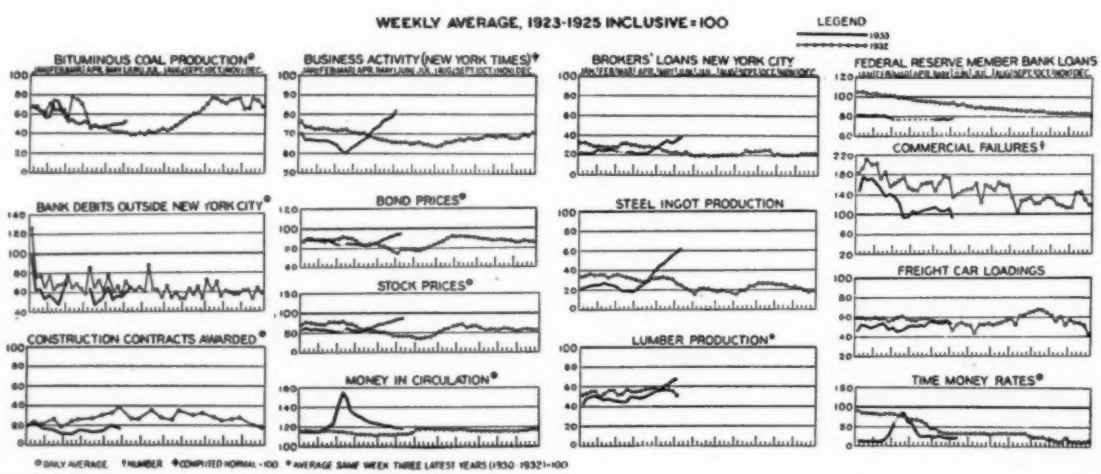
Improvement in this country started last fall and suffered a serious set-back as a result of political dissention and lack of confidence in our banks. The correcting of both of these two retarding factors permitted the advance to start again and the additional measures taken have fostered an unusually rapid advance.

We are inclined to forget, however, that this particular depression has been a world-wide affair, that several foreign countries started on the down grade before we did and that, apparently, our commercial and industrial activities are so inter-related, that satisfactory business recovery must be an international recovery. We are inclined to overlook the fact that the business of several nations has been recovering over a period of months. Business activity in Japan, for example, has been rising since March, 1932, in Italy since May, 1932, in France since last June, in Germany, Belgium and England since last July. The recovery in this country is a participation in a general recovery of commercial and industrial activity that started some months ago in several other countries.

The Cleveland Trust Company in its business bulletin for June



WEEKLY BUSINESS INDICATORS



15th has published a very interesting diagram showing the industrial activity of eight nations, both separately and combined, for the years 1927 to date. The diagram is reproduced herewith and we quote as follows from their explanation.

"The accompanying diagram shows monthly changes in industrial activity in eight countries during the past six years. The indexes have all been constructed in the same way by combining the figures showing the changes in pig iron output, steel production, coal production, and ton-miles of freight moved on the railroads. The series have been seasonally corrected, and given equal weights, and the average for the three years from 1927 through 1929 has been taken as being equal to 100. All the horizontal lines are 10 points apart.

"The heavy horizontal lines represent for each country the averages of the three pre-depression years of 1927, 1928 and 1929 that are taken as being equal to 100. The small diagram at the bottom shows the index of industrial activity for the eight countries combined. It was made by giving the data for each nation a weighting proportionate to the population. It shows the course of this international depression. The index for this country is carried through May of this year, those for the United Kingdom, Canada, and Germany through April, and the others through March."

The Author operates this 3-yard Class 111 Diesel dragline for Marchbank & Logan at a placer gold mine at Happy Camp, California.

A Shovel Runner's Prayer

By W. I. Morgan

O Lord, Thou knowest the days I've spent
Altering Thy foot stool;
My arms grow weary, and I feel
I might have been a better tool.

Thou knowest, Lord, how hard I've tried
To dig to line that Thou didst set;
The places where I've missed, O Lord,
Now straight would be if by regret.

Not up or down to dig, O Lord,
Where softer ways were laid
But through what came each day, O Lord,
I've tried to keep your grade.

Through digging tough, You know, O Lord,
I've tried to keep her square,
But digging through the stress of Life,
There's bound to be some wear.

O Lord, I know that I'm but dust
Tomorrow's feet will tread,
Heed not then, when my dead dust blows,
Those things in anger said.

And, when I make the big move up
O'er road that all must travel,
Have mercy, Lord, on me that's just
A mucker with a shovel.

Fighting Fire With a 4-yard Shovel

By D. W. EVANS

FOR THE PAST two years the A. E. Dick Contracting Company of Hazelton, has been using a Bucyrus-Erie 120-B for digging up a fire in one of the Hudson Coal Company's mines near Baltimore No. 5 Colliery at Wilkes-Barre, Pa. Dick Jones says there are several conflicting stories as to how the fire started, but that anyone old enough to remember the start of the fire 65 years ago has had too much experience telling stories to be entirely trustworthy. Every known method was tried unsuccessfully to put the fire out, and now the Dick organization, under the direction of Henry Smith, is digging it up and hauling it away.

The rock in the pit is burned brick red and rust color by the fire, and several spots can be seen where a pale blue flame burns away. Phil Fritz at the levers of the 4-yard quarry shovel loads these "hot shots" along with the rest of the rock into 12-yard Western air dump cars, loading a 3-car train in just 8 minutes. Three 42-ton Heisler steam, gear drive, locomotives and a 50-ton Vulcan duplex haul these 3-car trains to the dump a mile up the side of the mountain.

Coal loading is done by a Bucyrus-Erie 52-B electric shovel operated by Harold Tench. This shovel loads three veins of coal. two Baltimore and one checker, as they are uncovered by the 120-B. This shovel only works when the colliery needs coal, but the 120-B plugs along steadily in the rock day after day.

Where Cuts Go to 50 Feet Deep—Fills to 60 Feet High

(Continued from page 271)

put down. The holes were spaced about 12 feet apart in each row and were drilled 15 feet deep. These were chambered and loaded lightly with black powder. They were shot in small groups from time to time as the shovel needed material. The charges shook the shale up thoroughly without throwing it and gave the shovel a bank of muck to work against that handled like dirt.

Hauling was done in two Euclid 7-8 yard dump cars and two Athey 7-8 yard wagons, all mounted on crawlers and drawn by Caterpillar Sixty tractors. This type of equipment was selected in preference to trucks because of greater handling capacity, better dependability under wet winter conditions, and also because the resulting compacting of the fill as it was built up met the requirements that the material be consolidated as work progressed so that a period for settlement would not have to be allowed before laying concrete. Under the specifications, fill material other than rock is spread by hand labor—a provision designed to increase employment.

The B-2 shovel handled the loose dirt in the low, swampy area without any blasting being required. It loaded into three 4-cubic yard Winsor Dumps. The material was wasted off the road line and the depression will be filled with sound material from the cut next ahead.

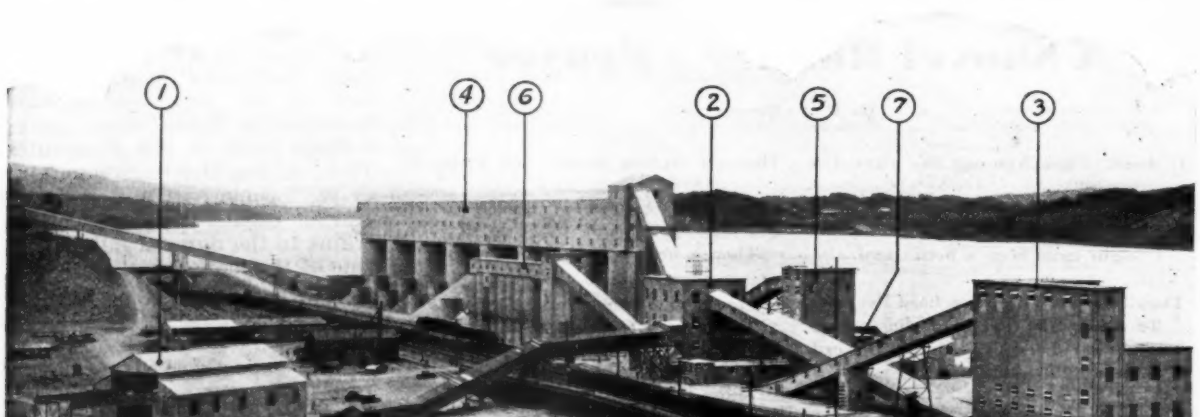
Patsy Small & Company are working about 70 men. The special regulations governing the contract require that no workman save supervisors and others who may be specifically expected shall work more than an average of 30 hours in any one week. This obliges the contractor to employ two labor forces for a 6-day week. In this particular instance, one crew works six consecutive days of 10 hours each and is then off during the following week.

The contract calls for completion of the work by June 1.

Plant at Clinton Point Quarry of New York Trap Rock Corporation

IN OUR February issue appeared an article by Spencer A. Jones describing the Clinton Point Quarry operations of the New York Trap Rock Corporation. Since this was published we received through the courtesy of *Rock Products* the above illustration showing the plant at Clinton Point. The numbers indicate (1) primary crusher (2) secondary crushers (3) scalping screens (4) main screening plant and storage silos (5) washers (6) silo for truck and rail loading (7) office, compressor room and shops.

This quarry acquired by the present owners in 1919 is located about 7 miles south of Poughkeepsie on the east bank of the Hudson River. The rock is dolomite drilled by Sanderson Cyclones shot with 60% gelatine which brings down 100 yards of solid per 58 pounds of gel. The rock is loaded with four Bucyrus-Eries (one 100-B electric and three 50-B steamers) to 7½-ton A.B. Macks with 5-yard Phoenix sidedump bodies. The plant uses a No. 21 Allis-Chalmers gyratory primary crusher, two 7-foot Symons cone reduction crushers, single and double deck Gyrex scalping screens, and Gyrex and Vibrex sizing screens over the storage silos. Storage capacity cares for 142,000 cubic yards most of which can be fed by gravity as needed onto a belt conveyor in a tunnel beneath the silos which takes the stone to the washer. Other conveyors pick it up and load to steamship, scows, railroad car or truck. The plant has a potential capacity of 1200 tons an hour with present equipment handles 600 tons. It is electrically operated and requires 1600 horsepower.



COURTESY ROCK PRODUCTS

FIELD NOTES

Handy Addition to Flag Staff or Handle

A RED or warning flag with a very handy addition to the staff is shown in picture. A small chisel point fitted into a ferrule on the staff end makes it possible to post the flag almost anywhere and on anything. It will always go into the ground, can be stuck into wood of any kind, and between bricks. —*Frank W. Bentley, Jr.*

Old Pipe plus Scrap Rails plus Welding—Result: New Bridge

THE NUMBER 5 mine of the *Kemmerer Coal Company*, located at Sublet, Wyoming, has always yielded the company's best commercial coal but during the past year the haulage distance had grown so long that it was almost impossible to show a profit, operating the mine in the old way. Investigation showed that the Number 5 vein could be tapped at another point with a rock tunnel only 80 feet long. This point was only about 9300 feet from the Number 5-A tipple and about three miles from the present Number 5 tipple. To move the Number 5 tipple from its old location to the new one would be expensive and would mean building a mile of new track, storage yards, etc. The Number 5-A tipple was not being used to full capacity and could easily handle the output from the new opening. This change would require only approximately 9300 feet of track for mine locomotive service, which, of course, is considerable cheaper to construct than standard railroad track.

The most serious drawback to this scheme was the necessity of crossing a gully, at the bottom of which was a creek and the main highway from Kemmerer to Yellowstone National Park. A survey showed that a very good track, with a grade of about .65 per cent in favor of the load, could be obtained by constructing a bridge, with a span of 393 feet, 4 inches and a height of 52 feet, over the highway.

Because of present business conditions in the coal mining industry, very little money was available for new construction projects. The company, therefore, looked around for some inexpensive method of building the necessary bridge. There was at hand an accumulation of 10 inch steel pipe and a considerable amount of scrap rail in various mines which had been closed down.

The coal company designed, and with the aid of a General Electric welding set, built the 393-foot-4-inch bridge using the old pipe and the rail on hand. The only new metal utilized on the job was 135 pounds of General Electric Type F electrode. As all of the old metal had already been written off the books, the cost of this bridge was but little more than the cost of electrodes and labor.

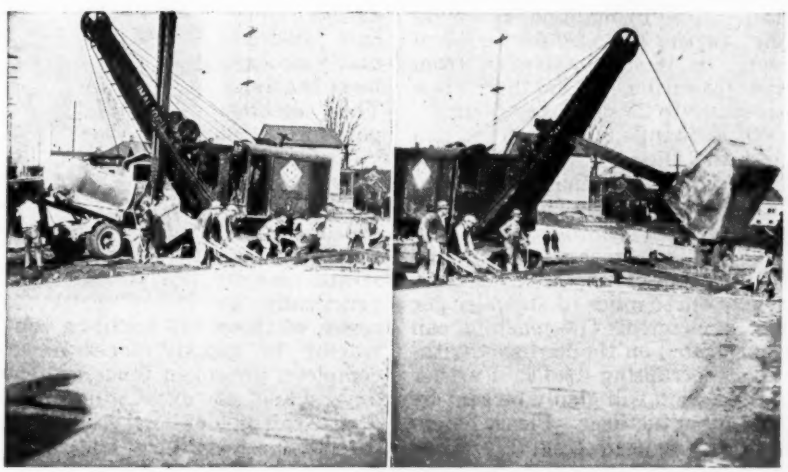
Straight Line Pick

HERE is a handy kink for the excavating engineer — a "straight-line" pick. When there isn't room enough for a man to swing a pick comfortably, as in cramped quarters, take the head off, slip it into a pipe as indicated, and your man is ready to go ahead. He can get into "any corner" with a pick of this kind.

—*W. F. Schaphorst, M.E.*

A Shovel that Became a Paver

AN INTERESTING innovation by the *West Coast Construction Company* on their Aurora Avenue work in Seattle is illustrated here. The contractor did not own a paver and elected to use pre-mixed concrete from a central mixing plant for paving their section of the work which consisted of the north approach fill and undercrossing for the bridge at North 39th Street. The Tru-Mix concrete was delivered to the job in Pioneer Sand & Gravel bath tub trucks carrying 2.07 yards of mixture. The contractor designed for their 1¼-yard Lima 101 a special 2½-yard steel dump bucket capable of handling a full truck load of concrete. This special dipper was mounted on the shovel in the place of the regular dipper. When lowered, it received the charge of pre-mixed concrete directly from the truck. The shovel working alongside the prepared subgrade would place the charge of concrete and distribute it. The concrete is spread, tamped and finished by hand.



COURTESY PACIFIC BUILDER AND ENGINEER

EQUIPMENT
You Ought to Know About

Shoulder Finishing Machine

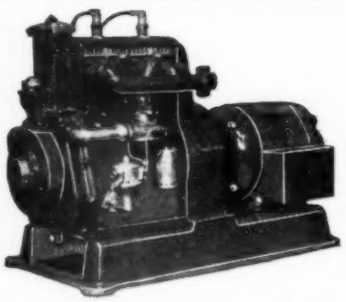
A MACHINE for finishing road shoulders has been brought out by *The Whitcomb Locomotive Co., Rochelle, Illinois.* This tool forms the shoulder and ditch contours, smoothing and carrying off the excess dirt in a single operation. The transmission is of dual type and permits a range of speeds to accommodate the machine to any soil conditions. In the case of heavy, clayey soil the rate of travel is as close to worm-pace as required. When the soil is normal the speed is accelerated.

The device, pictured here, consists of elevating buckets operat-

ing in a rigid boom, mounted on a heavy duty Sterling truck chassis, having an auxiliary transmission especially designed to give the necessary slow speeds and powered with an 80 h.p. Waukesha 6-cylinder engine. The grade is maintained by a hydraulic hoist. The buckets travel across the contour, conveying the excess soil up and over, loading it into a dump truck which travels beside it. When not in service the unit can be dismantled, releasing the carrier truck for general work, or it can be trailed from one operation to another at a speed up to 25 miles per hour.

On a 30 mile stretch of Indiana highway the use of this machine is stated to have enabled the contractor to work his entire shoulder and ditch contour at 30 per cent of his former costs per mile of highway. Completion of from two to three miles of shoulder per day is claimed. The machine can be operated on the highway without interrupting traffic. Further information will gladly be sent by the manufacturer. Please mention *Excavating Engineer* when writing.

Alternating Current Generators



ONE THOUSAND and 2,000-watt models of 110 volt, 60 cycle, single phase, alternating current generators were recently announced by *D. W. Onan & Sons, 103 Royalston Ave., Minneapolis, Minnesota.* Designed to operate on gasoline, gas or distillate, these new generators will be found particularly adaptable in camps and on the job where standard electrical appliances are needed. According to the manufacturer, current generated on these units usually costs no more than is paid by city users. For additional information and specifications write the manufacturer, mentioning this magazine.

Cleveland Trench Guards

A NEW product recently announced by *The Cleveland Trencher Company* is the Cleveland Trench Guard. These patented metal trench and excavation guards are intended to replace unsatisfactory and ineffectual wooden barricades. The accompanying illustration shows their design and construction and demonstrates how practically a series of them will enable a contractor to quickly construct a complete, unbroken fence around any shape of excavation. The guard rail holder swivels in any direction. A feature materially increasing their usability.

Other features include: eliminating of space that is found when any type of non-interconnected barricade is used; reduction by half of the number of supports required; setting of alternate rails at different heights adding greatly to the attention value; lantern and flag support providing full view from every direction; and rust-proof, durable construction. "You'll be astonished at their low cost," says the manufacturer of this new product. Additional information will be gladly sent. The address is *20100 St. Clair Ave., Cleveland, Ohio.* Please use a postal card found on the first page of the "Shots From the Firing Line" section when writing.

LaPlant-Choate Bottomless Scraper

THE ABOVE illustration shows the LaPlant-Choate (Knapp) Bottomless Scraper, a tool, called by the manufacturer, a combined scraper, grader and bank sloper. Its construction enables it to be used to good advantage as a hauling unit for moving earth from three to four hundred feet; for spreading earth that has been dumped on fills; for grading in close quarters; for leveling; for grading, sloping and smoothing banks; and for other uses.

The scraper is operated hydraulicly by means of an oil pump on the tractor power take-off controlled by a single lever placed within convenient reach of the tractor operator's seat. It will cut to a depth of from one inch to approximately twelve inches; and spread from one to eighteen inches.

A postal card will bring more information about this scraper if desired address *LaPlant-Choate Manufacturing Company, Inc., Cedar Rapids, Iowa.*

Judge: "Have you nothing to offer the court before sentence is passed on you?"

Prisoner: "No, Judge, I had ten dollars, but my lawyer took that."

SHOTS from the Firing Line

National Industrial Recovery Act Goes into Action

THE PASSAGE of the National Industrial Recovery Act, is probably the most momentus piece of legislation, so far as the field of excavation is concerned, enacted in recent years.

The Industrial Control section authorizes the President to enter into agreements or approve voluntary agreements between labor organizations and trade associations, or groups engaged in a trade or industry. Codes of fair competition are required to include fair trade practices, maximum hours and fair working conditions. In this way it is hoped to assure both the employer and employee in industry a more stable basis of real prosperity. Should the industry fail to submit a voluntary agreement, the President may prescribe its code. By licensing an industry he may enforce its code and inflict penalties for violations.

The second section of the act provides $3,300,000,000 for public works. The administration of the fund is under the direction of the Federal Emergency Administrator of Public Works and the money will be distributed to states, counties and municipalities as well as being used by the Federal government for construction.

Projects eligible for construction with these funds include Federal Public Works, such as public buildings, Federal highways and parkways, river and harbor improvements, flood control, conservation and development of natural resources, construction of naval vessels, air craft, air craft equipment, army housing projects, mechanization of army units and practically all other varieties of public construction by the Federal government. While the entire amount to be expended for these items is not specified, of special interest to our industry is the allotment of not less than $50,000,000 for construction of U. S. forest park Indian reservation and other public land roads.

The second group of projects under the public works appropriation consists of Federal Aid grants to states for highway improvements, the amount set aside for this being not less than $400,000,000. This will be used for emergency construction of the Federal Aid highway systems and extensions thereof into and through municipalities. Attention will be given to the elimination of hazards to highway traffic such as separation of grades at crossings, reconstruction of existing railroad grade crossing structures, the relocation of highways to eliminate railroad crossings, the widening of narrow bridges and roadways, sidewalks, bridges and by-pass roads. This highway construction will also include secondary or feeder roads agreed upon by the state highway departments and the Secretary of Agriculture. The $400,000,000 will be distributed among the states, ⅞ of the amount on the basis of the regular Federal Aid which allots one-third on the basis of population, one-third on the basis of area, and one-third on the mileage of post roads; the other one-eighth will be distributed on the basis of population. A tabulation of the amount allotted to each state appeared in the June issue of Excavating Engineer.

The third group of eligible projects covers Federal grants and loans to states, counties, municipalities and other subdivisions for needed public works. No definite amount is set aside for this purpose. It is possible that as much as $2,000,000,000 will be utilized on these projects. They will include construction, repair and improvement of public highways, streets, parkways, public buildings and many publicly-owned facilities. Also the conservation and development of natural resources and any other public works contracted and carried on by states, counties, municipalities or other units of government. Projects in this classification, if approved, will be financed by the Federal government to the extent of 30% of the costs of materials and labor. The remainder of the cost is to be a loan reasonably secured and to be repaid on liberal terms.

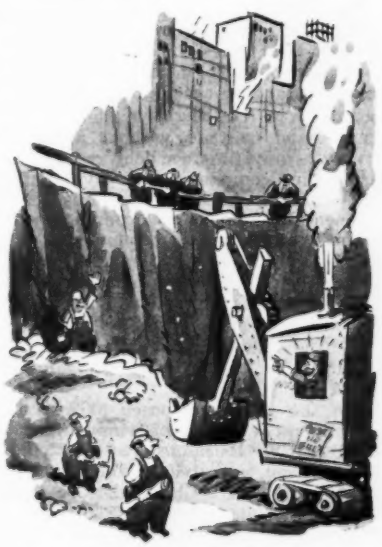
The fourth classification provides Federal loans for certain private works devoted to public use. This will include low cost housing and slum clearance projects contracted under public regulation and control; bridges, hospitals partially supported by public funds, reservoirs, pumping plants, dry docks and other self liquidating projects constructed by private corporations; railroad maintenance and equipment, and any projects heretofore eligible for loans from the R.F.C. The Public Works Bill provides for loans to such projects up to a certain proportion of the cost, the percentage depending upon the character of the project.

The funds necessary for carrying out this tremendous public works program will be obtained from the sale of U. S. bonds similar to Liberty bonds. Provision is made through special taxes for additional revenues to the Federal government of $220,000,000 per year to cover the interest on these bonds and their repayment.

In determining how the money provided in the public works section shall be expended the administration will investigate along the following lines. The first test will be: Is the project needed? If this can be answered in the affirmative the next questions considered will be: How many men will be put to work? How soon will the work start? For what period will it continue? What will it cost? Can the unit of government concerned afford its portion of the costs?

Priority will be given to those projects otherwise acceptable which can be gotten under way with a minimum delay and which will afford a maximum of employment for the expenditure. These funds are not available for direct relief or for so-called work relief projects. The public works administration will be concerned with advancing sound public works to be economically executed on the customary commercial basis. While preference will be given to local labor the projects will be carried out as nearly as possible in accordance with natural accepted procedure except as the law fixes maximum hours and will require payment of reasonable wages. This will mean the providing of employment throughout the industries that furnish transportation, equipment and supplies with a general stimulation of business.

All contracts under this act will be required to contain provisions to assure: (a) no convict labor; (b) a 30-hour week; (c) just and reasonable wages; (d) preference to ex-service men; (e) preference to citizens and bona-fide local residents; and (f) maximum of human labor consistent with sound economy and public advantage



BY LICHTY IN THE CHICAGO SUNDAY TIMES

"Do You Expect Me to Go On With a Lousy Crowd Like That?"

Uncle Sam Collects From Motor Vehicle Owners More Than He Expends on Federal Aid Highways.

FEDERAL AID to states in road building was originally considered necessary as an encouragement to the construction and maintenance of post roads to facilitate carrying the United States mail, for military purposes and generally for the public welfare. At the outset it was not contemplated that the motorists should pay for these improvements.

But beginning with the imposition of war excise taxes on the sale of motor vehicles, parts and accessories which were not removed until long after the war and continuing with the Federal gasoline tax and the resumption of the excise taxes, motorists have been burdened with special imposts which have yielded more than the Federal government has spent in aid for highway construction, according to the National Highway Users Conference.

The following figures obtained by them from the U. S. Department of Agriculture tell the story:

Year	Payments to States for Federal Aid Road Work		Special Federal Taxes Collected from Motorists
1918	$ 425,445.85		$ 23,981,268.35
1919	2,702,247.89		48,834,271.47
1920	19,593,431.09		143,922,792.01
1921	55,974,305.55		115,546,249.31
1922	88,205,932.91		104,433,762.75
1923	69,677,241.86		144,290,490.28
1924	79,217,397.90		158,014,709.40
1925	95,749,998.11		124,686,745.30
1926	87,754,534.57		138,155,194.80
1927	81,371,013.03		66,437,881.32
1928	80,802,232.55		51,628,265.96
1929	82,097,380.38		*
1930	75,880,862.84		
1931	133,340,910.64		
1932	127,367,119.74	(1932-1933	
1933 (estimated)	110,000,000.00	10 months)	138,511,021.70
	$1,190,160,054.91		$1,258,442,652.65

*Note: War excise taxes repealed 1928; new excise taxes imposed 1932.

Winners of the National Safety Competition of 1932

ANNOUNCEMENT of the winners of the National Safety Competition of 1932, giving recognition to notable safety records attained by numerous mines and quarries, was made recently by Scott Turner, Director of the United States Bureau of Mines, which sponsored the contest. Three hundred and twenty-two mines and quarries in 34 states took part in the competition, and outstanding accomplishments were attained in the longtime operation of mines and quarries without accidents or with quite low accident rates. The competing companies were divided into five classes: anthracite mining companies, bituminous-coal mining companies, metal mining companies, operators of nonmetallic mineral mines other than coal mines, and quarries or open-cut mines. A replica of the bronze trophy, "Sentinels of Safety," donated by The Explosives Engineer, was awarded to the winning company in each group.

In the group composed of quarries and open-cut mines, the winner was the Rogers City limestone quarry, Rogers City, Mich., operated by the Michigan Limestone and Chemical Company, which was operated for 487,046 man-hours with no lost-time accident.

In the anthracite mining group, the winner was the Jeddo No. 7 mine at Jeddo, Pa., operated by the Jeddo-Highland Coal Co. During 165,624 man-hours of operation, this mine had but 9 lost-time accidents causing 116 days of disability.

In the bituminous coal mine group, the highest award was given to the Alloy mine, Alloy, W. Wa., operated by the Electro Metallurgical Co., which had no lost-time accidents during the period of 225,687 man-hours of operation.

Of the metal mines competing, the winner was the Balmat zinc, lead and iron ores mine, Balmat, N. Y., operated by the St. Joseph Lead Co., with but one lost-time accident causing 2 days of disability during 162,912 man-hours of operation.

In the nonmetallic mineral group, first place was given to the Retsof rock salt mine, Retsof, N. Y., operated by the Retsof Mining Co., which was operated through 270,408 man-hours without a lost-time accident. This mine also was given the highest award in this group in 1931.

In the group comprised of quarries and open-cut mines, the following-named operations were given honorable mention. All of these mines or quarries operated without a lost-time accident:

LaSalle limestone quarry, LaSalle, Ill., of the Marquette Cement Manufacturing Co.; Mahoning open-cut iron ore mine, Hibbing, Minn., of the Mahoning Ore and Steel Co.; Nos. 5 and 6 limestone quarries, Martinsburg, W. Va., of the North American Cement Corp.; New Haven trap rock quarry, New Haven, Conn., of the New Haven Trap Rock Co.; Security limestone quarry, Security, Md., of the North American Cement Corp.; Stringtown limestone quarry, Stringtown, Okla., of the Southwest Stone Co.; No. 6 limestone and cement rock quarry, Nazareth, Pa., of the Pennsylvania-Dixie Cement Corp.; Holston limestone rock quarry, Mascot, Tenn., of the American Limestone Co.; Hanover limestone quarry, Hanover, Pa., of the Bethlehem Mines Corp.; Birdsboro trap rock quarry, Birdsboro, Pa., of the John T. Dyer Quary Co.; Cowell limestone quarry, Cowell, Calif., of the Cowell Portland Cement Co.; No. 3 cement rock and limestone quarry, Coplay, Pa., of the Coplay Cement Manufacturing Co.; Fogelsville limestone quarry, Fogelsville, Pa., of the Lehigh Portland Cement Co.; Victorville limerock quarry, Victorville, Calif., of the Southwestern Portland Cement Co.

Rock-Cut limestone quarry, Syracuse, N. Y., of the General Crushed Stone Co.; Auburn limestone quarry, Auburn, N. Y., of the General Crushed Stone Co.; Naginey limestone quarry, Naginey, Pa., of the Bethlehem Mines Corp.; Union Furnace limestone quarry, Tyrone, Pa., of the American Lime & Stone Co.; Union Bridge limestone quarry, Union Bridge, Md., of the Lehigh Portland Cement Co.; Bennett open-cut iron-ore mine, Keewatin, Minn., of the Bennett Mining Co.; LaSalle limestone quarry, LaSalle, Ill., of the Alpha Portland Cement Co.; Bessemer limestone quarry, Bessemer, Pa., of the Bessemer Limestone & Cement Co.; Sandts Eddy cement rock quarry, Sandts Eddy, Pa., of the Lehigh Portland Cement Co.; Akron limestone quarry, Akron, N. Y., of the General Crushed Stone Co.; Clinchfield limestone quarry, Clinchfield, Ga., of the Pennsylvania-Dixie Cement Corp.; Scranton iron-ore mine, Hibbing, Minn., of the Hoyt Mining Co.; Brooksville lime rock and clay quarry, Brooksville, Fla., of the Florida Portland Cement Co.; Speed Mill cement rock quarry, Speed, Indiana, of the Louisville Cement Corp.; Catskill limestone quarry, Cementon, N. Y., of the Alpha Portland Cement Co.; Plainville trap rock quarry, Plainville, Conn., of the Connecticut Quarries Co., Inc.; Mason City limestone and clay quarry, Mason City, Iowa, of the Lehigh Portland Cement Co.; Albany iron ore mine, Hibbing, Minn., operated by the Pickands, Mather & Co., manager, Crete Mining Co.

Ridgeville limestone quarry, Ridgeville, Ind., of the Mid-West Rock Products Corp.; Hyde limestone quarry, York, Pa., of the Medusa Portland Cement Co.; Gasport limestone quarry, Gasport, N. Y., of the Wickwire Spencer Steel Co.; Corsica iron ore mine, Elcor, Minn., of the Corsica Iron Co.; Dallas limestone and shale quarry, Dallas, Tex., of the Lone Star Cement Co., Tex.; Nazareth cement rock quarry, Nazareth, Pa., of the Lone Star Cement Co., Pennsylvania; No. 4 limestone and cement rock quarry, Nazareth, Pa., of the Pennsylvania-Dixie Cement Corp.; Greencastle limestone quarry, Green-

castle, Ind., of the Lone Star Cement Co., Indiana, Inc.; Martins Creek No. 4 cement rock quarry, Martins Creek, Pa., of the Alpha Portland Cement Co.; Pembroke limestone quarry, Pembroke, Va., of the Pembroke Limestone Corp.; Nazareth limestone rock quarry, Nazareth, Pa., of the Nazareth Cement Co.; Knippa No. 4 trap rock quarry, Knippa, Texas, of the Southwest Stone Co.; Thomaston Cement Mill limestone quarry, Thomaston, Me., of the Lawrence Portland Cement Co.; Mahnomen iron ore mine, Ironton, Minn., of the Cuyuna Ore Co.; Bonner Springs limestone and shale quarry, Bonner Springs, Kan., of the Lone Star Cement Co., Kansas; No. 6-X sandstone quarry, Amherst, Ohio, the Cleveland Quarries Co.; Biwabik iron ore mine, Biwabik, Minn., of the Biwabik Mining Co.; San Vicente limestone quarry, Davenport, Calif., of the Santa Cruz Portland Cement Co.; Sagamore iron ore mine, Riverton, Minn., of the Sagamore Ore Mining Co.; Plymouth iron ore mine, Wakefield, Mich., of the Plymouth Mining Co.; Petoskey limestone quarry, Petoskey, Mich., of the Petoskey Portland Cement Co.

Among those receiving honorable mention in the nonmetallic mines was the Columbia No. 3 underground limestone mine, Valmeyer, Illinois of the Columbia Quarry Company.

Progress in accident-prevention, in a year that was marked by generally unfavorable business conditions that might have tempted some companies to relax their safety efforts, was an encouraging feature of the records of a number of companies that participated in the National Safety Competition, Mr. Turner commented. The prevention of accidents to the men who work in the mines and quarries, while always important, particularly requires the attention of operating executives in times like the present, he said.

In determining the relative standing of the various companies enrolled in the Competition, all mines and quarries were graded according to their accident-severity rates, that is, according to the number of days of disability of employees on account of accidents in proportion to the number of man-hours of work done by all employees at the plant.

Building Cement Bound Macadam Test Road

ENGINEERS planning to attend the Century of Progress Exposition in Chicago will have an opportunity to see one of the most interesting tests in road construction that is to be carried on anywhere in America this summer.

To assist engineers and contractors in securing efficiency and economy in the design and construction of cement bound macadam, the Portland Cement Association is engaged in building an experimental road of this type, near Elmhurst, Illinois, just west of Chicago. Sixty test sections are to be built, making a road 1200 feet long.

The principal objective of this test is to develop and demonstrate design and construction practices that will permit cement bound macadam to be used efficiently under practically all conditions. Field tests will be reinforced by investigations in the Association research laboratory. Crushed stone, slag, and gravel will be used in the various test sections, with grout of varying consistencies. Included with many tests, will be the effect of vibration, as compared with rolling, in securing compaction and thorough penetration of the pavement.

Construction started during the week of June 12 and will continue approximately five weeks.

Colonel Sawyer and General Johnson Administer National Industrial Recovery Act

HAROLD L. ICKES, Secretary of Interior, as Chairman of the special board for Public Works states:

"We are proceeding as rapidly as possible to set up an efficient organization to carry out the public works program under Title 2 of the National Industrial Recovery Act. The administration of public works will be in the Interior Building, under the direct charge of Colonel Donald H. Sawyer, as temporary emergency Administrator of Public Works. The purpose is to keep entirely distinct and separate the administration under Title 1 of the act, which is in charge of General Hugh S. Johnson, and the administration of the public works program under Colonel Sawyer.

"Administrative set-up contemplates the appointment of a Public Works Administrator in each state who will be appointed by the President . . . The administration has set high standards for the State Administrators. An outstanding man in each State who has no professional or business connections that would subject him to a conflict of interests represents the type of administrator that is desired . . . Appointments will be made on character and ability without reference to political affiliations. "

Foreign

Argentina Notes

In order to avoid delay in starting highway work under the National Highway Law of January 1, 1933, an executive decree has been issued, **approving the budget of the National Bureau of Highways** for 1933. The budget has a grand total estimated at 59,501,000 pesos but it carries only general figures and not the detailed amounts to be invested in each province and territory. These will be announced later. The estimated revenue for the fiscal year 1933 is 50,001,000 pesos; there is, in addition, a balance of 9,500,000 pesos transferred from the 1932 fiscal year. (The Argentine paper peso at present exchange is equal to about $0.30.)

France

The Paris Municipal Council has approved a budget of 1,907,619,000 francs (about $76,304,000 U. S. at par) for improvement and beautification of the city during the 1933 fiscal year. This exceeds the amount expended last year by 310,000,000 francs. The program as drafted includes widening, and construction of new streets. Unemployment relief is one of the prime objectives of the program.

China Notes

An excellent 30-foot **road** is now **completed between Chungking and Chengtu**, 238 miles. It crosses a 3,200-foot mountain pass, and makes the trip possible by motor car in 14 hours. Prior to recent improvements mail between these two cities (600,000 and 400,000 inhabitants, respectively) was by couriers on day and night shifts requiring 4½ days. Travelers took 10 or 11 days in sedan chairs. Mail and passengers soon will be transported from Shanghai to Chengtu in 2 days instead of 20 to 30 days.

Manchoukuo

A comprehensive highway construction program is being initiated by the Manchoukuo (Manchurian) Government. A State Highways Bureau and a State Highways Commission are provided for by the following laws: (1) The Organization Law of the State Highways Bureau; and (2) the Organization Law of the State Highways Commission. S. Fujine (a former director of the South Manchurian Railway) has been appointed chief of the State Highways Bureau with headquarters at Hsinking. **It is planned to construct approximately 94,000 miles of first-class highways, 94,000 miles of second-class, and 18,000 miles of third-class during a ten year period.** The Director has announced about 5,600 miles of roads are to be constructed by June 1935, at a cost of Yuan 20,000,000. The total cost of the ten-year program is estimated at about Yuan 96,000,000. It is stated that Yuan 15,000,000 has been appropriated for construction during the first two years from the proceeds of the Yuan 30,000,000 bond issue floated in Japan in December 1932.

Mexico Notes

On May 29 the **Mexican Government allocated** to the Department of Communications an appropriation of 2,500,000 pesos for federal cooperation with the respective state governments in the construction of roads. (At present exchange the Mexican peso is equal to approximately $0.28, U. S.)

The Matamoros Chamber of Commerce proposes to complete grading work on a fifty-mile section of the Matamoros-C. Victoria Highway. Arrangements have been made to lease the required machinery from a Texas county highway department. Financing will be through local subscriptions, and aid is being solicited from state and federal authorities.

Rumania

The Rumanian Ministerial Council on April 14th canceled the Rumanian road contract with the Swedish firm of Swenska Vegaktiebolaget for the construction of 466 miles of roads. This contract was awarded in October 1930 on a unit cost basis for approximately $21,440,000 and construction was begun in 1931, to be completed in 1936. It is understood that the Rumanian Government had been meeting its financial obligations to the contractors, and the cancellation was due to the contractor failing to agree to a reduction in construction costs to the extent demanded by the Ministry of Public Works. A clause in the contract, so our report reads, provided for a revision of material costs on February 1st of each year.

Canada

Montreal and Vicinity

By S. A. STEPHENS, JR.

The City of Montreal has formally **accepted the Wellington Street Tunnel** under the Lachine Canal. The work took about three years to complete, as certain phases could be done only when navigation was closed. It is doubtful when the tunnel will be open for traffic. Land for approaches must be expropriated and tram tracks have to be laid. The tunnel provides passage for trams, automobiles and pedestrians. **Dufresne Construction Co.** were general contractors.

Work is starting on the **new St. Mary's Hospital building** at once. It is situated in the Cote des Neiges district, behind the mountain, and will cost $1,000,000. John Quinlan.

Work on the **bridge over the St. Lawrence River** below Lachine has been progressing steadily all winter. Piers on the north shore are progressing favorably and work on the south piers will start this summer. Exceptionally swift water makes the construction of piers difficult, the location being at the head of the Lachine Rapids. **A. Janin & Co.** are general contractors and the steel will be fabricated and erected by Dominion Bridge Co. Ltd., the two contracts totalling $3,000,000.

Excavating for the new Neurology Building for McGill University is practically finished. E. G. M. Cape & Co. Ltd. have the general contract and **Galardo** did the excavating with a Bucyrus-Erie B-2. The new building will be connected to the Royal Victoria Hospital by a bridge over University Street.

The Provincial Roads Dept. are **spending $6,500,000** for maintenance and new construction this summer. The greater part of the above figure will go for upkeep but a new road connecting Chambly with the Taschereau Blvd., leading over the new Harbour Bridge to Montreal, is contemplated. A number of small jobs around Montreal are also to be undertaken. These consist mostly of straightening curves, levelling grades, etc.

Geo. Mills & Sons Ltd. are rushing work on the Cote des Neiges Subway under the Canadian Pacific Railway's tracks. Completion is scheduled for ten weeks time.

New England Notes

By J. C. ALEXANDER

A new quarry has been opened at Jefferson, Massachusetts. The company is known as **The Wachusett Trap Rock Co. Inc.** E. J. O'Connor of Lowell, is President of the new company and was formerly connected with the Bucyrus-Erie Co. for a number of years. Ralph M. Davis of Old Town, Maine, well known roadbuilder in Maine, is Treasurer. Production of crushed stone (which is a trap rock) started June 15th, 1933. This company reports a number of orders already on hand.

Ellsworth H. Lewis of Andover, Massachusetts was awarded the road job at Sherborn on which bids were opened at the State House on June 13th. From the equipment which we have seen enroute for Sherborn we take it that Mr. Lewis is to start operations immediately.

New York Notes

By G. E. PETERSON

The P. T. Cox Company of New York, who have the general contract on a grade separation job at Mineola, Long Island, have sublet the excavation to the **Nutley Contracting Company** of New York. The shovel work is being done by **Jack Mayer of Flushing**, Long Island for the Nutley Company. Mr. Foote has charge of the P. T. Cox portion of the work and Mr. Berry is field superintendent for the Nutley Company.

Ryan & Davis, Inc. of Long Island City are about done with the excavation at Woodbourne, for the Babor-Comeau Company who have the general contract for a state hospital there. Harold H. Tompkins of Brooklyn has been doing the hauling on the Woodbourne job. Ryan & Davis also have their Bucyrus-Erie 43-B shovel working at Hancock, where they are doing the excavating for the Stanley Contracting Company. Jack Davis is in charge at Hancock and says that the up-state climate certainly agrees with him.

Johnson, Drake & Piper of Freeport, L. I., who have the contract for paving the south Pearl Street extension at Albany, have sublet all the concrete work to the M. F. Dollard Sr. and M. F. Dollard Jr. Company of Albany.

The Frederick Snare Corp. of New York was low bidder on the Catskill-Hudson Bridge with a bid of $2,165,601.

Announcement has been made by **Carey, Baxter, Kennedy, Inc.** of the removal of their principal office to 500 Fifth Avenue, New York, N. Y.

New Jersey Notes

By H. M. DAVISON

We have mentioned before that the **State of New Jersey is finishing the approaches** to many of its main highways which are at the Newark end of the high-speed artery and viaduct crossing the New Jersey meadows from Newark to Jersey City and eventually leading into the Holland Tunnel which is the double vehicular tube connecting New York and New Jersey, for automobile and truck traffic. This development with its radiating feeders in every direction, presents very interesting features. The main artery connects at Jersey Junctions with U. S. No. 1 which runs from Maine to Florida and as Provincial Highway No. 1 from St. Stephens to Moneton, New Brunswick, Canada; U. S. No. 30—The Lincoln, U. S. No. 6—The Roosevelt, U. S. No. 22—The Wm. Penn, 9-W to Albany and Montreal, 9-W-17 to Buffalo and U. S. No. 20. There are 16 road and highway bridge contracts involved in finishing connecting links, most of them carry-overs from 1932—four let in 1933.

Four arteries terminate at Newark and are carried across the yards and tracks of the Pennsylvania Railroad from various points in Newark to the high-speed highway. Foundations for these elevated grade crossings and viaducts are on soft ground and the piers have to be mounted on concrete piles. Four general contracts were placed. One with **George M. Brewster Sons Company** of Bogota, and the concrete piling on this job is being driven to a depth of 30 feet by **Best & Tolsby's** Bucyrus-Erie 41-B steamer with crane attachment and pile driver leads. **J. B. Chapman & Sons** are completing one of these viaducts and the concrete piles for their section were driven by **Linde & Griffith** of Newark with their 42-B Bucyrus-Erie steamer, clamshell and pile driver lead attachment. **P. T. Cox** of New York City, also has a section of this work and the concrete piles of this job are also being driven by **Linde & Griffith** and again the 42-B steamer with its complete pile driving attachment.

There will be approximately 20,000 lineal feet of 16-foot and 18-foot piles driven on this section. The piling is being made at the Massey Concrete Products Corporation plant at Newark and Incor cement is being used.

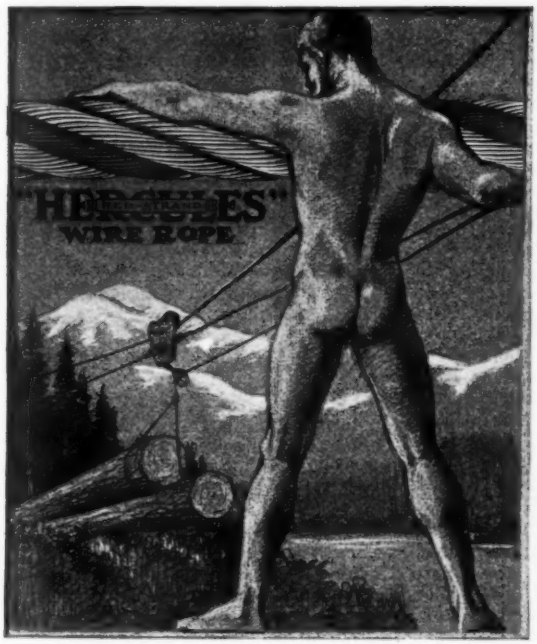
S. J. Groves Company of Minneapolis, through their local New Jersey office at Ridgefield had a fourth section of this work and here also the concrete piles were driven by **Linde & Griffith's** 42-B steamer.

These piles are pre-cast concrete of octagonal outside section and it is interesting to note that this most difficult work on every one of the four contracts was performed by the 41-B and 42-B Bucyrus-Erie steam machines above referred to.

The 5th connecting viaduct from Route 29 to the Highspeed Highway at Umker Avenue, Newark, was built by **J. Rich Steers** with their 21-B and 31-B Bucyrus-Eries and the larger machine drive their piles.

"That is a government revenue cutter."

"I had no idea they did it with a boat."



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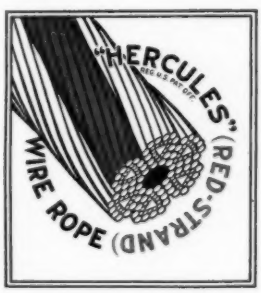

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Shots From the Firing Line— *Continued*

Philadelphia and Vicinity

By M. G. CONWAY

The H. R. Miller Company of Lancaster, has its Berks County State Highway job, involving approximately 150,000 yards of excavation about seventy-five percent completed.

They were low bidders on May 26th, at the Pennsylvania State Highway Letting, on the Berks County job (Strausstown Borough), involving approximately 26,000 yards of excavation. We wish Jack Brenner and Ray Miller the best of luck with this contract. This is somewhat far-fetched, inasmuch as Stanley Brenner who is Superintendent and also brother of Mr. Jack Brenner maintains that they are using for their trademark the swastika. He also maintains that Hitler has copied this trademark from them. Of course, the Lancaster County Dutch call it a hex sign.

Versaggi Brothers Construction Co. of Wildwood, New Jersey, were low bidder on May 26th, at the Pennsylvania State Highway Letting, on the Berks County job (Hamburg and Lenhartsville Boros), involving approximately 16,000 yards of excavation. Ross Versaggi expressed himself at the Letting that while they had been idle for considerable time, they felt it was better not to bid a job unless they could see some profit in it. We wish them the best of luck on this job.

Sinclair & Grigg of Philadelphia, have been awarded the contract by the Pennsylvania Railroad for rebuilding of Pier No. 1 Clinton Street south of Boston street, Baltimore. This pier was destroyed by fire last summer. The project consists of a concrete pier 930 feet long and 223 feet wide with two decks.

The Northeastern Piping & Construction Co. of North Tonawanda, N. Y. are low bidders on the heating tunnel changes to take place at the Capitol Power Plant Heating Tunnel along First St., N.E. between E. Capitol and C. Sts., and in N. Capitol St., Washington, D. C. Their total bid being $51,825.00.

Anthracite News

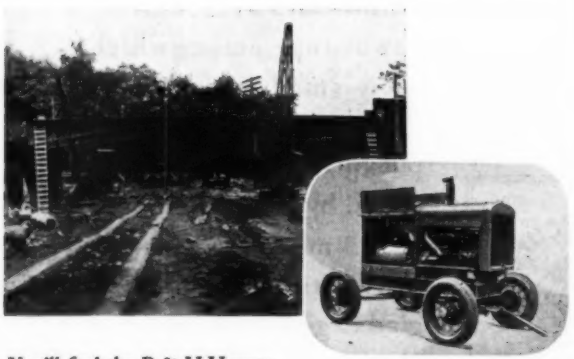
By D. W. EVANS

Within a stone's throw of Pittston No. 1 Colliery at Dunmore, Pa., **Carey, Baxter & Kennedy**, engineers and contractors of New York, are taking out coal for the Pittston Coal Company. A Bucyrus-Monighan Diesel-driven walking dragline with 160 ft. boom and 6 yard Taylor-Wharton bucket handles the stripping, and a Bucyrus-Erie 43-B 1½ yard Diesel shovel loads out the coal. In February, 1932, these excavating machines started getting out fourth Dunmore vein coal on the side of the mountain above the colliery. In ten months the Monighan stripped 406,000 yards of overburden, and the

Bucyrus-Erie 43-B loaded 75,000 tons of coal into 5-ton mine cars, hauled by Whitcomb gasoline locomotives.

In January of this year the dragline and shovel were moved down to clean up some small pockets of top vein coal, which because of the soft roof could not be reclaimed by any other method. The locomotives were moved to Vandling, where **Carey, Baxter & Kennedy**

VERSATILE



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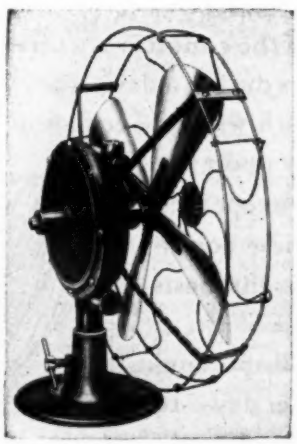

BLOW BIGGER OUTPUTS YOUR WAY

Stifling heat and insect pests take your operator's mind off his work — his hands off the levers. A few seconds added to the time of each digging cycle on account of heat and pests may involve the loss of many dollars by the end of the day.

Give your operator one of these steam fans and he will pay you back in increased output within the first week. And the fan will go on paying dividends through the rest of the summer and for many summers to come.

This fan is self-oiling, requires little or no attention while in service. A ¼-inch pipe will supply all the steam it needs.

Write for Prices—no obligation

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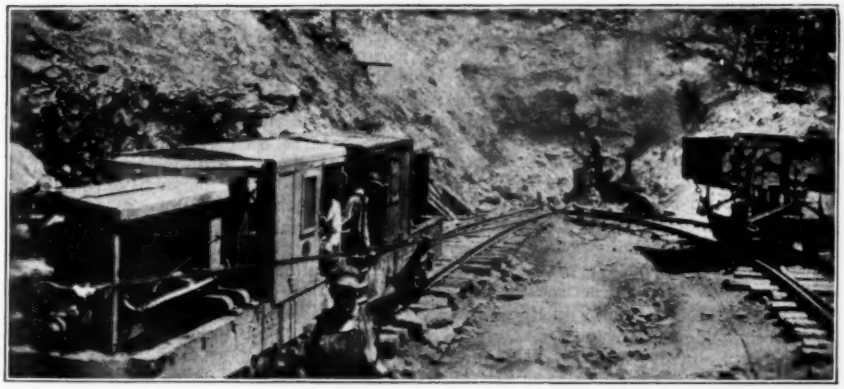
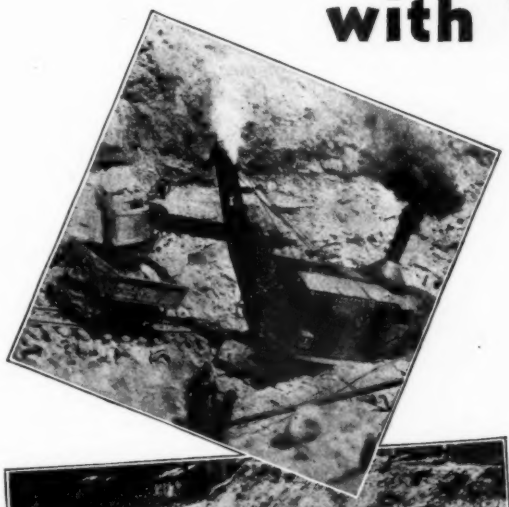
BUCYRUS ERIE



At the right: The beginning of the adit at Camp 2. Western cars handled all the excavated material both on surface and underground.

Below: A Western 5-yard heavy duty car under the shovel. Electrically operated shovels and locomotives were installed as soon as underground operations began.

Low Cost Haulage in Tunnel Work with Western Dump Cars

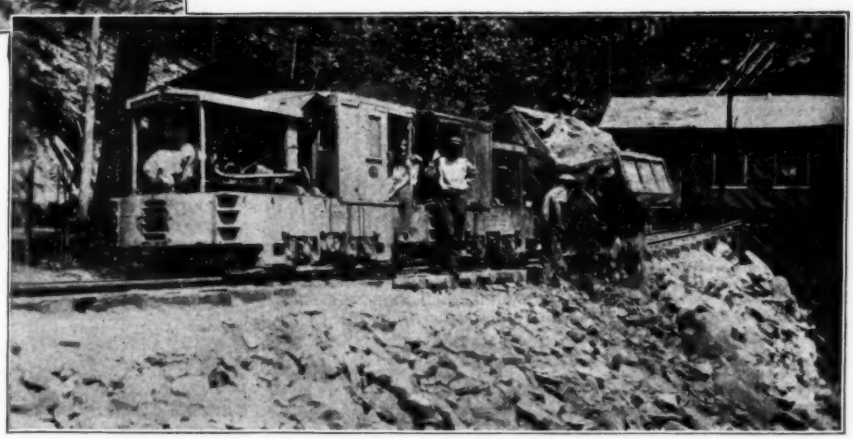


Rinehart-Dennis Co. used Western dump cars when they tunneled through Gauley Mountain, W. Va. The 3½ mile bore through solid rock was 46 feet in diameter for a considerable part of the distance with a minimum diameter of 32 feet.

On this record breaking job, Western cars handled all of the excavated material with the greatest ease and efficiency. The illustrations clearly indicate the rugged construction and other characteristics that were responsible for their economical operation.

Western cars insure low cost haulage on surface as well as underground operations. Write for Catalog 81-K describing the entire line.

Western Wheeled Scraper Company
AURORA, ILLINOIS, U. S. A.



Above: Loaded Western Dump Car being pulled to the surface by means of a cable and hoisting engine.

At the right: On the dump. Notice the wide door opening, the steep dumping angle and the rugged construction of the Western 5-yard heavy duty dump car.

For your convenience in writing to Western Wheeled Scraper Company, you will find a card bound in this issue.

Shots From the Firing Line— *Continued*

have a large coal stripping operation under way for the Hudson Coal Company, using another 6-yard Bucyrus-Monighan for stripping and a Bucyrus-Erie E-2¼ yard Diesel shovel for coal loading (cut on Page 280). The present work at Dunmore makes it necessary to move the big walking dragline frequently from one pocket to the next, and also it is found practical to load into trucks with the 43-B. Paul Goddard, Superintendent for Carey, Baxter & Kennedy, finds the walking device on the Bucyrus-Monighan a fine time saver on these moves. Lee Crewes, operator and Art Nundstrom, oiler on the Monighan can keep her digging practically all the time.

Down in the pit across the road which was dug by the Bucyrus-Monighan, Lee Crewes handles the 43-B (see picture in the column on the left), loading out the coal which averages 5 feet in thickness into 5-ton Mack trucks equipped with pneumatic tires. The haul to the breaker is so short three trucks can almost keep Lee busy. The only other equipment in the pit is an Allis-Chalmers Monarch 50 tractor, equipped with a bulldozer which is used for cleaning the top of the coal and for grading ramps so the trucks can reach the shovel. This job is under the general supervision of W. E. Conroy, Gen. Supt. for Carey, Baxter & Kennedy, who also runs the large stripping job at Vandling, near Forest City, Pa.

Through a pleasant interview with **F. J. Meikrantz**, General Superintendent and J. W. Rich, Engineer, we learn that the **Central Pennsylvania Quarry Stripping & Construction Company** of Hazelton, Pa., have 12 stripping jobs under way at present in the anthracite coal fields. It is interesting to note that 10 of these 12 operations are being done by draglines, the other two being of course, shovel operations. Dragline operation is advocated by Fred Meikrantz, wherever possible because, for a given capacity, the dragline has so much greater dumping reach than the shovel, that often transportation equipment and expense can be eliminated. He points out that usually a dragline will only produce 60% as much yardage as a shovel of the same capacity, and in rock which must be handled on most stripping jobs in the anthracite field, the percentage is even more in favor of the shovel, so that this factor often offsets dragline advantage.

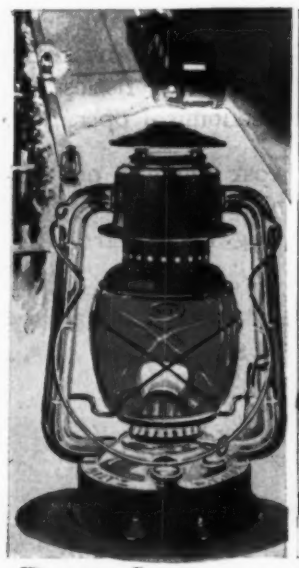
One of the most interesting jobs this concern now has under way is being done at Drifton for the **Wolf Creek Coal Company**, using two Bucyrus-Erie 52-B electric draglines, with 2½ yard buckets. On this job the coal vein is 50 ft. thick and lies almost exactly vertical, so that removal of overburden in this case uncovers a very large tonnage of coal. One of the 52-B's is now being used to load the coal into 5-ton mine cars which are hauled directly to the colliery.

Baltimore and Vicinity

By S. M. CHRISTHILF

The Pennsylvania Railroad awarded contract on June 9th to **Sinclair and Griggs of Philadelphia** for construction of Clinton Street Pier, destroyed by fire last summer, at a reported cost of $1,500,000. The work is to start immediately.

The Highway Commission of Maryland is reported to be considering the construction of **dual concrete highway from Delaware to Washington, D. C.**, passing on the outskirts of Baltimore City. In conjunction with this work, the present Philadelphia and Belair



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Red Light that warns of *Danger*

DIETZ TORCHES
White Light that *Marks the Way*

The strong warning light and storm-proof dependability of Dietz Lanterns, together with the well made Dietz Illuminating Torches for places of lesser hazard, provide night lighting equipment that safeguards lives and gives adequate protection to Contractors.

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NEW YORK Founded 1840

DIETZ LANTERNS

Makers of Lanterns for the World

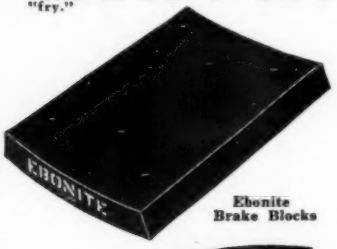
Ebonite

Cuts Operating Costs On Shovels, Cranes, Draglines, Hoists, Tractors and Trucks.

Ebonite MULTIPLIES operating hours between re-lines, cuts time losses for brake adjustments. It gives a firm soft positive grip. It dissipates surface heat rapidly because it contains far more compound (heat conductor) and far less asbestos (heat insulator). Eliminates slippage for it does not "glaze" or "fry."

Sold on Guaranteed Performance basis.

Ebonite Brake Lining, Brake Blocks and Clutch Facings are sold on a basis of: More Operating Hours, Better Brakes or your money back. Just order a test re-line today. Give make and model of equipment. If the Ebonite doesn't prove better and more economical than the lining you are now using, send it back.



Ebonite Brake Blocks

Ebonite Special Shapes

Circular on Request

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INCORPORATED
1117 S. Michigan Avenue, - Chicago, U.S.A.

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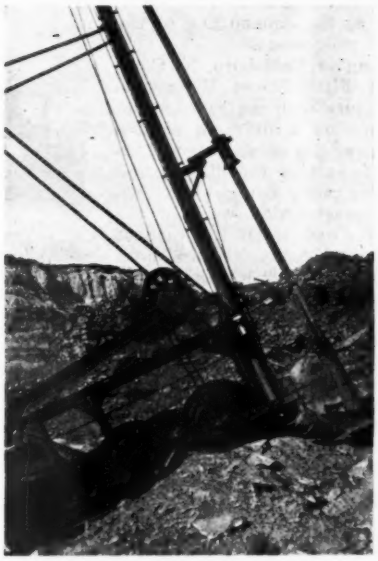
faster moving . . .



The full caterpillar mounting and faster set-up of Bucyrus-Armstrong drills cut down the moving time. So stable is the machine that practically all moves are easily and quickly made — up steep grade or across irregular or soft ground. The individually driven caterpillars together with the pivoting axle permit a great amount of flexibility when moving and allow leveling up the machine on uneven ground for "set-up". Stabilizing-jacks are part of the machine, securely attached to the rigid frame.

Visit operations similar to yours where these new drills are at work . . . talk to their owners . . . watch them drill and move . . . ask the men on the job about their performance and the large savings they make possible.

greater footage . . .

Large hole drilled at a speed that ordinary machines accomplish only on smaller hole. Here are just a few of the features that contribute to the new standard of output capacity set by Bucyrus-Armstrong drills: ample power with sturdy construction to back it up . . . all-steel cable and rubber shock absorbers that cut cable expense 75 percent and make delays a rarity . . . correctly designed bits, mechanically sharpened to accurate shape and gauge.

lower drilling costs!

Performance records prove that the output of any blast hole drill over five years old is less than half that of modern Bucyrus-Armstrong equipment. Drilling cost per ton of blasted material can be reduced more than 50% by the use of these all-steel drills. Send the coupon for complete information. Bucyrus-Erie Company, South Milwaukee, Wisconsin.

BUCYRUS-ERIE COMPANY, South Milwaukee, Wis.
I would like to know more about Bucyrus-Armstrong:

☐ **All-steel blast hole drills.** ☐ **Bit sharpeners.** ☐ **Tools.**

Name ..... **Title** .....
Company .....
Address .....

Shots From the Firing Line— *Continued*

Roads will be widened to a 40-foot width. Plans are preliminary pending decision of Federal Government on allotment of funds.

Baltimore City is reported to have **under consideration various improvements** and new construction such as viaducts, schools, sewage plants, all contingent on Government aid.

Virginia Notes

By M. L. HATCH

The largest and most active construction projects under way in Richmond at this time are the three bridge jobs made possible by loans from the R. F. C. to help the unemployment situation in and around Richmond. The longest of these bridges is a high reinforced, long span, concrete arch structure carrying the bridge deck on spandrel arches and is about 4000 feet long and approximately 90 feet high at the highest point. It crosses the James River on a line that touches the upper end of Belle Isle; this location having been selected as the most convenient to take care of through North and South traffic. This project, which will take about a year to complete, will be a distinct asset to Richmond both as to usefulness and beauty of appearance. **S. M. Siesel Company** of Milwaukee are the contractors and from appearances are making excellent progress on the job. The major construction equipment involves two Model 600-A P. & H. cranes brought from their work recently completed in Washington, D. C., and one Moore Speed Crane; also a 10-ton stiff leg derrick. At the present time, this contract only recently being awarded, they are engaged in clearing right-of-way and building construction trestles; however, good progress is being made.

J. S. Bowers of Whiteville, N. C. has the contract for what is known as the First Street Viaduct which is about 1000 feet long across Shockoe Valley on the North side of the City connecting the North side with the main section on the upper level, this job employing the replacement of a steel viaduct with a concrete structure which will be built as the dismantling of the old structure progresses.

T. A. Loving of Goldsboro, N. C., is handling the Fifth Street Viaduct, a parallel structure with the First Street project connecting a different section of the City over the same Valley. This job also contemplates the dismantling of an existing steel bridge that will precede the construction work of the new structure, and as in the case of the First Street Viaduct, will use parts of the old structure in conjunction with the construction of the new before completely dismantling it. Very little construction equipment is being employed on either the First or the Fifth Street projects, the principal items being skid mounted derricks of small capacity.

An item which may be of interest is that **business generally seems to have a more optimistic outlook** in this section, although the construction program is still far from normal at this writing.

Western Pennsylvania Notes

By T. H. BARRETT

H. H. Lauer formerly with the Universal Atlas Cement Corporation has taken the position of Superintendent for the Basic Products Company (Green Bay Cement Company) at Pittsburgh.

Ohio Notes

Harry E. Frost, Findlay, has been named State Highway Superintendent of Maintenance for Hancock County, Charles E. McKee, Chief Engineer of Maintenance, has announced today. Mr. Frost, formerly a road contractor, succeeds Charles L. Biggs, deceased.

The State Highway Department has purchased ground on State Route 74, west of Batavia, Clermont County, upon which will be erected a highway garage to house working equipment repair shop and provide an office for the Highway Department's Clermont County maintenance superintendent. The construction date has not yet been determined. Frank Galbreath, Resident Engineer of the Highway Department in Clermont County, has drawn the plans and will supervise some of the construction.

Operator H. J. Potter of Fremont, sends us the above picture showing a Lorain he operated for the Lake County Excavating Company at Perrysburg. The work was on State Route No. 20. Mr. Potter is an old timer in operating and craning steam shovels and is an enthusiastic reader of Excavating Engineer.

Illinois Notes

The U. S. Engineers at Rock Island will receive bids on June 29th for placing 10,959 cubic yards to fill crevasses on the Iowa River in the vicinity of Wapello, Iowa. The work is for Private Drainage Districts Nos. 8, 11 and 14 in Louisa County. The crevasses are spread over 12 miles of the north side of the Iowa River. 50 calendar days are allowed for completion.

South Dakota News

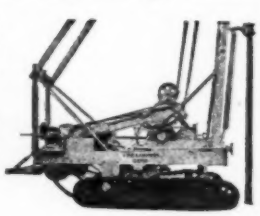
By H. H. BUCHANAN

The Grand Hills Mining Co. opened their operations south of Custer in May 1932, using their Bucyrus-Erie Type 1030 shovel for loading their Iowa Mfg. Co. gold washer. In September of last year they installed another operation with a gold washer manufactured by the Diamond Iron Works, Minneapolis, Minn. According to R. W. Gish, they too are expecting a good season's run, weather permitting.

The Peerless Mining Co. commenced operations April 1st, installing a new Iowa gold washing machine and a new Speeder Model 90 1¼ yard shovel. This operation is in Pleasant Valley, about 12 miles south of Custer, and the work is under the direction of E. A. Martin, General Manager.

"CLIPPER" Lowers Drilling Costs

The many advantages of the new type Loomis "Clipper" Full Length Crawlers can be used on your job to lower your drilling costs.



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THE LOOMIS MACHINE CO. K STREET
Established 1842 TIFFIN, OHIO

Use less crane time per job *with*

WILLIAMS
· BUCKETS ·

Exclusive power-arm design gives the Williams "Champion" unusual digging power—and shorter cable overhaul assures faster operation, reduced cable wear and lower upkeep. *Write for bulletin.*

THE WELLMAN ENGINEERING CO.
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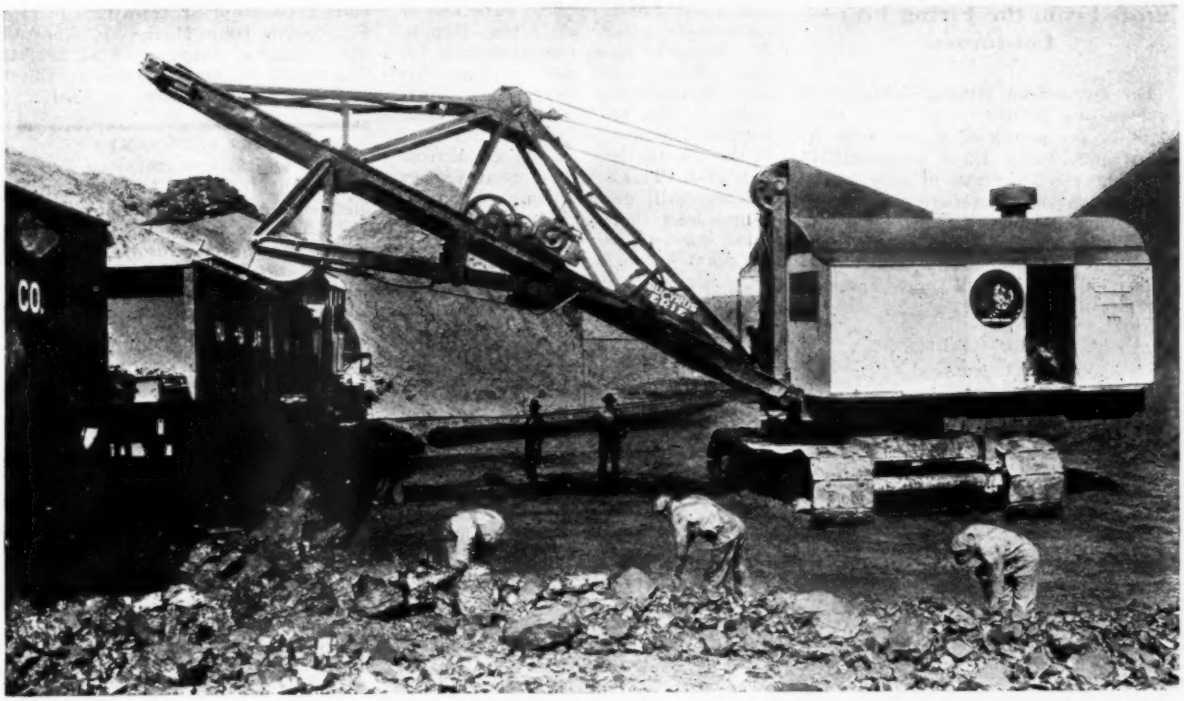


A Westinghouse-powered Bucyrus-Erie horizontal-thrust-type Shovel loading coal in the Kansas fields.

SPEED-UP your digging with VARIABLE VOLTAGE CONTROL

WITH present profit margins cut to the bone and with the time-element so vitally related to profits . . . the smooth, quick response of Westinghouse Variable-Voltage Control for electric shovels, is a decided asset. Its unusual flexibility, permitting almost instant speed variation, sets a faster digging pace!

Westinghouse-equipped shovels are not only geared for faster digging . . . they are powered by motors and control that are built to withstand that pace . . . yard after yard, and day after day.

The new type MC Shovel Motor has exclusive design features that eliminate loose mechanical and electrical parts under the most severe operating conditions. Every part of the drum controller is readily accessible . . . contact tips are easily replaced . . . switch segments are interchangeable. Magnet brakes are constructed of abrasive-resisting material of proved long-life design.

From power supply to dipper trip, Westinghouse can help you minimize your shovel costs. Mail the coupon for a 40-page illustrated booklet describing recent Westinghouse shovel developments.

Westinghouse

Quality workmanship guarantees every Westinghouse product

SEND FOR INFORMATION

Westinghouse Electric & Manufacturing Company
Room 2-N—East Pittsburgh, Pa.

Gentlemen: Please send me a copy of "Power Shovels," (Rotaprint 738).

Name .....

Company .....

Address ..... T 79617

City ..... *State* ..... EE 7-33

When writing to Westinghouse Electric & Manufacturing Company, please use coupon or card bound in this issue.

Shots From the Firing Line— *Continued*

The Homestead Mining Company is constructing a new road from their plant to the mouth of a new 5000 ft. shaft mine, with their Bucyrus-Erie 32-B shovel. They are in very heavy rock excavation and securing unusually good yardage on this project. The work is under the direction of Chief Engineer J. D. Johnson, Master Mechanic Sidney J. Staple, and Construction Superintendent Ayers.

Missouri Notes

By C. F. BARTON

The above illustration shows a new Bucyrus-Erie D-2 Diesel digging its way into the pit of the **Tavern Rock Sand Company** at Klondike. This Company is a subsidiary of the Owens Illinois Glass Company who have one of their main plants at Alton, Illinois. The Klondike plant furnishes sand for this Alton works and requirements have considerably increased recently owing to the heavy demand for beer bottles. The new D-2 joins an old timer in the pit, the latter being a Bucyrus-Erie 20-B. This old timer is nine years old and still going strong. The machines load the blasted sand rock to small quarry cars which are moved to the plant in two car trains each drawn by a single horse. The operation at Klondike is in charge of Superintendent Ueltzen.

St. Louis and Vicinity

By A. J. KOENIG

Bids for four sections of pavement on Natural Bridge and Grand Boulevards were received by the Board of Public Service, St. Louis. Stiers Construction Co. were low for paving Natural Bridge Ave. between Garrison and Grand with a bid of $15,544. They were also low for paving Grand boulevard from Lee Ave. to Natural Bridge at $37,442 and Lee to Florissant at $26,071. The Trinidad Asphalt Co. were low with a bid $90,528 for paving Natural Bridge from Grand to Fair Aves. The bidding among the various contractors was very keen all bids being 25% below the engineers estimate.

Bids for paving the street around the Memorial Plaza in St. Louis were received by the Board of Public Service. The following sections were involved: Chestnut St. from 12th to 15th, Fourteenth from Market to Chestnut Sts. Trinidad Asphalt Co. at $34,542. Thirteenth St. from Market to Chestnut Sts. Crean & Scott at $2047.

WALTER A. ZELNICKER

It is with regret that we learn of the death of Walter A. Zelnicker who died suddenly at his home in St. Louis. Mr. Zelnicker was well known among the contractors in this district and in Alabama, having operated an equipment supply house since 1898.

Chas. Haines, Greenville, Ohio, would like to have work for two draglines, one two-yard with 60 ft. boom and one one-yard with 45 ft. boom.

The following low bids were received by the Missouri State Highway Commission on May 19th:

6.8 miles grading, Bollinger county, $10,785; 6.619 miles grading Ste. Genevieve county, $13,979, R. B. Potashnick.

19 miles gravel, Adair county, M. E. Gillioz, $202,327.

7.231 miles gravel, Bollinger county, W. J. Menefee Const. Co., $3,909.

3.547 miles gravel, Cape Girardeau county, Ralph E. Brown, $9,279.

14.461 miles graded earth Cass county, Hoover Bros. Const. Co., $25,173.

2.711 miles gravel, Dunklin county, $1,194; 8.15 miles gravel, Ripley county, $3,626, Gaines Bros. Co.

A Wire Rope *Fundamental*

Every wire rope sold by Bucyrus-Erie Company is of *uniform high quality* throughout . . . constructed with greatest care by precision machinery and skilled workmen. But this is not the only safeguard you get when you buy rope from us.

Selection of the *proper* wire rope for the operating conditions to be encountered is *fundamental.*

In over 50 years' experience in building all types of excavating machinery, Bucyrus-Erie Company has gathered much valuable operating data on wire ropes. The advantage of this experience will be passed on to you when you send us your next wire rope order.

Always have an extra rope on hand . . . it may prevent a needless shutdown when continuous output is sorely needed.

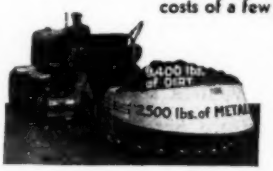
BUCYRUS ERIE

BUCYRUS-ERIE COMPANY

Specialty Department South Milwaukee, Wis.

Hauls 3½ Times Its Weight in Dirt

NOW you can own a tractor-operated scraper that is a real excavator. It is built along the same lines as the famous cable-operated Sauerman Crescent Scrapers used by thousands of contractors. It has the power and strength to tackle the toughest digging, while its ease of handling and large carrying capacity assure dirt moving costs of a few cents per yard.

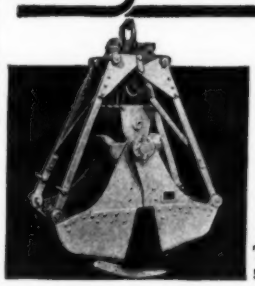


Write for prices and details on scraper to meet your needs, stating size of your tractor.

SAUERMAN BROS.
474 S. Clinton St., Chicago

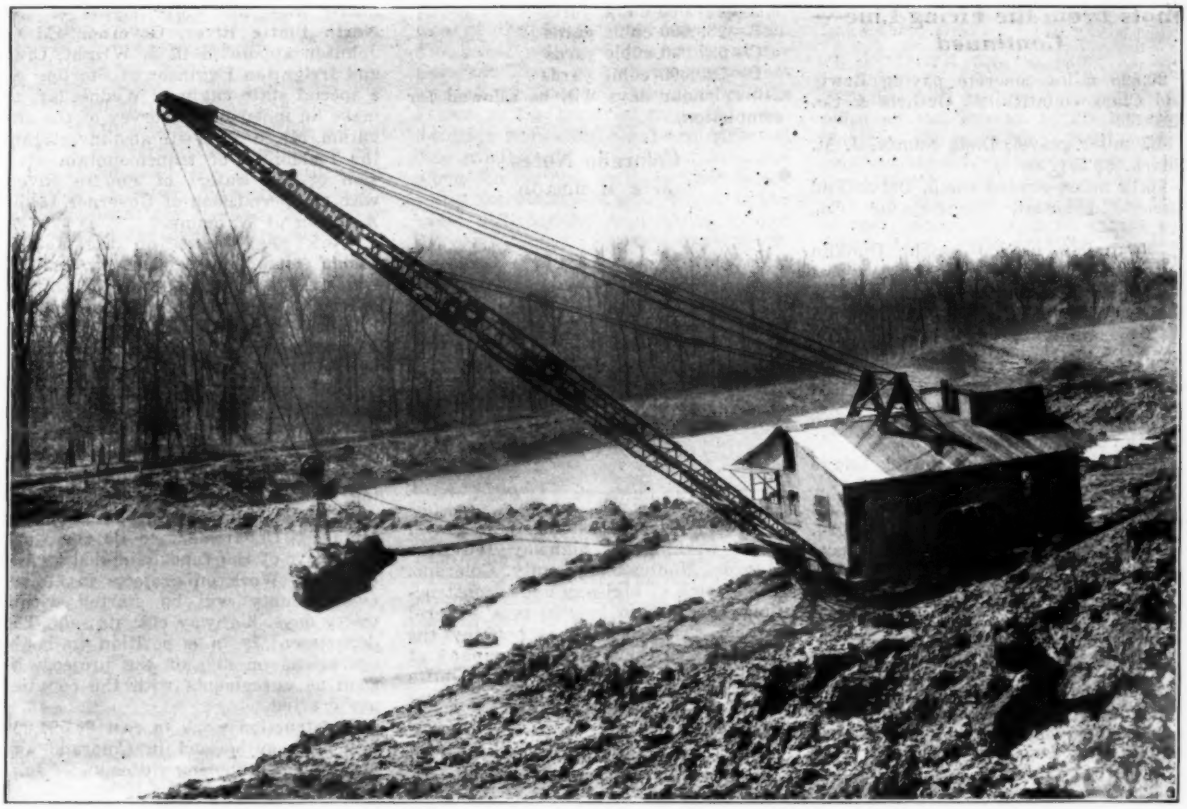
CRESCENT HYDRAULIC SCRAPER

Hayward Buckets



AS A DIGGING clam shell the Hayward Class "K" has the stamina needed for natural excavation and other hard digging. Its extra features give it extra power and performance.

THE HAYWARD COMPANY,
52-54 Church St., New York, N. Y.



Even Rain-Soaked Fields Cannot Halt The Walking Dragline [Time Economy on Soft or Wet Footing]

The Bucyrus-Monighan Walker operates on soft footing as well as on rough, stony ground. It proceeds over surfaces that stop other machines.

This is because of the Walker's exclusive type of traction—the machine is supported on its treads when moving—but on a separate circular base when digging. The bearing for the traction treads is not impaired, even if the base settles into soft ground while digging.

Base and treads have unusually large bearing areas, consequently the Walker doesn't mire down on any surface that will support a man. This machine prevents wet-weather losses. Bucyrus-Monighan Company, Chicago, Illinois.

Time Economy

1. In Inclement Weather Operation
2. On Soft or Wet Footing
3. When Changing Direction
4. For Time-Limit Contracts
5. Where Work Varies
6. When Maneuvering in Limited Space

Bucyrus-Monighan Walker

BUCYRUS MONIGHAN

Walking Draglines 1 to 10 cubic yards

Sold by
BUCYRUS-ERIE CO.
South Milwaukee, Wisconsin

Representatives throughout the U. S. A. Branch Offices: Boston, New York, Philadelphia, Atlanta, Birmingham, Pittsburgh, Buffalo, Detroit, Chicago, St. Louis, Kansas City, Dallas, San Francisco. Offices or Distributors throughout the world.

B-41

For your convenience in writing to Bucyrus-Erie Co., you will find a card bound in this issue.

Shots From the Firing Line— *Continued*

20.598 miles concrete paving Lewis and Clark counties, A. Guthrie & Co. $261,558.

4.3 miles gravel, Dade county, J. M. Roark, $2,591.

10.12 miles graded earth, Dallas and Laclede counties, Carte-Harlin Co., $21,983.

2.64 miles graded earth, Dunklin county, E. F. Delaney, $5,068.

8.136 miles graded earth, Greene county, Carte-Harlin Co., $12,136.

5.944 miles graded earth, Iron county, Len Gray, $19,924.

5.698 miles graded earth, Monroe county, Samples & Elsea, $6,888.

5.598 miles graded earth, Morgan county, E. K. Porter, $11,709.

16 miles grading and gravel, Osage county, Neyer Const. Co., $61,979.

7.211 miles graded earth, Ray county, Henderson Const. Co., $30,024.

6.882 miles graded earth, Stoddard county, Richmond Const. Co., $18,539.

Southern Notes

By W. W. WHORLEY

The many friends of J. W. (Jerry) Gwin, well known highway contractor of Birmingham, Alabama, will be glad to hear that he is out again after a long confinement due to a severe case of arthritis.

R. J. Reid of Birmingham recently secured contract for grading a spur track to the mines of the Alabama Fuel & Iron Company to connect with the Seaboard Air Line R. R. near Odenville, Ala. A Bucyrus-Erie 41-B steam shovel is handling the excavation.

The Roquemore Gravel & Slag Company is enjoying a good volume of business at their slag pit near Bessemer and at their gravel pit at Montgomery, Alabama. Jess Moses and R. W. McCullough are loading slag at Bessemer with a 50-B steam shovel. Mr. J. D. Roquemore is President and General Manager.

W. L. Coston of Bessemer, Alabama has completed construction of a sewerage disposal plant for Jefferson County. This work involved laying of pipes, buildings for treatment and amounted to approximately $40,000.00.

The Morris Construction Company of Douglasville, Georgia has recently completed a heavy piece of highway construction between Leeds and Pell City, Alabama.

Roy L. Igo advises that he has made excellent progress on his levee work on the Arkansas River.

River Notes

The second New Orleans District opened bids on June 26th for the construction of approximately **1,612,000 cubic yards of levee** work in that district. The work is all on Chamberlain-Lobdell levee in the Atchafalaya Front Levee District. This is new levee running 21 to 30 feet in height. There are four sections, the yardage in each running:

A—307,000 cubic yards
B—239,000 cubic yards
C—537,000 cubic yards
D—529,000 cubic yards

240 calendar days will be allowed for completion.

Colorado Notes

By H. M. BIBAUD

The above illustration shows a gravel plant working on highway 160 near Mancos, Montezuma County, Colorado. The stretch of highway under construction, 21 miles in length, is a Federal project. The contract is held by the **New Mexico Construction Company** of Albuquerque and Denver. Three shifts are employed here on the work using 60 to 70 men.

Construction of a **forty-mile drainage canal** from the closed basin district of the San Luis Valley in southern Colorado is being sought by Colorado, New Mexico and Texas. Announcement to that effect was made in Washington, D. C. by M. C. Hinderlider, Colorado state engineer who is there to discuss the project with the Reconstruction Finance Corporation and other Governmental agencies. The project would drain 400,000 acres of high-grade Colorado land now made useless by seepage and would permit the state to enter into an agreement with Texas and New Mexico, whereby additional water from the Rio Grande would be stored for Colorado use to be replaced by the drainage flow from the basin.

The Twin Lakes tunnel project through the Continental Divide to divert water from the Roaring Fork River to the headquarters of the Arkansas will probably be approved by the R. F. C. according to Theodore A. Walters, first Assistant Secretary of the Interior who was recently in Denver for his first inspection of the Reclamation Service Headquarters in that city.

Irrigated acreage of the upper San Luis Valley will be increased by 10,000 acres of land north of Del Norte with the completion of a spillway at the Continental reservoir thirty-seven miles north of Creede. A crew of thirty men is working at the reservoir at North Clear Creek excavating and pouring concrete over the earthen dam. About 13,000 cubic yards of dirt are to be excavated. The project will aid the lettuce growers of the Del Norte section.

In an attempt to end the long controversy between Colorado and Wyoming over the **water rights of the North Platte River,** Governor Ed C. Johnson appointed R. J. Wright, Civil and Irrigation Engineer of Sterling as a special state engineer Wednesday, to make an independent survey of the situation. Mr. Wright will also investigate the feasibility of transmountain division of the waters of Poudre River, with the permission of Governor Leslie A. Miller of Wyoming.

Work has started on the **Poudre Canon road improvement project** on which the state will spend $10,000. Men on the Larimer County Reconstruction Finance Corporation list get the work in ninety-six hour shifts at 40 cents per hour.

Work already has been started on several state highway projects as part of Governor Ed. C. Johnson's program to spend $600,000 in highway funds at once. Agreements with counties are being made either to carry out the work with state funds, or to allow the State Highway Department to do the work with part of the funds supplied by the counties. Work on projects in almost every county will be started within thirty days, highway officials said. The department is in a position to begin operations on any of the projects as soon as agreements with the counties are drafted.

Construction work to cost $8,591,000 has been authorized in Colorado and six other neighboring states under self-liquidating loans by the Reconstruction Finance Corporation, officials announced Wednesday. Of this, Colorado's share is to be $1,784,000. This amount will create 2,402,000 man hours of work, according to estimates of Harvey Couch, director of the corporation. That much work would occupy 3,336 men for ninety days. The funds will be made available under the plan of allocation outlined in the bill and Colorado will not be forced to match any of the funds with state money. One-eighth of the money must be spent on secondary roads, while the remainder will be used on main arterial highways.

New Mexico Notes

The State Highway Department will hold a bidding on July 6th covering grading, construction of drainage structures and crushed base course surfacing, oil treated, on three projects located on U. S. 60 in De Baca County. The length of the work is about 8¾ miles. Completion is required by December 28th with a penalty of $100 per day for overtime.

Bids will also be taken on 7¾ miles of base course surfacing on U. S. 54-66 in Guadalupe County. This job is to be completed not later than October 15th with a $100 per day penalty for overtime. Minimum wages are specified at fifty cents per hour for skilled labor and thirty-five cents per hour for unskilled. Camp charges are specified at not more than seventy-five cents per day for meals and lodging.

An extract from **State Highway Commission Minutes of June 14,** reads: "It is hereby ordered that the State

Shots From the Firing Line— *Continued*

Highway Engineer be instructed and authorized to pass upon the qualifications of any and all prospective bidders prior to delivering the applicant a bidding blank, and the State Highway Engineer is hereby authorized to reject any applicant for bidding blank if in his opinion the applicant is not qualified." In line with the above ruling any contractor wishing to bid in this State will have to qualify to the State Highway Engineer before he can receive a bidding blank.

Arizona Notes

By H. M. BIBAUD

Representatives of Central and Northern Arizona Counties meeting in Prescott June 8th, unanimously agreed to support the tentative budget of the State Highway Commision and to send a large delegation to Phoenix, June 19th to attend a public hearing on the budget. Roads in northern Arizona have been neglected in the past, speakers declared. A committee was appointed to meet with Governor Moeur, at Prescott in a conference upon the subject to urge his support of the budget.

The ruling May 24 of Judge Emmet H. Wilson in upholding the validity of the **All-American Canal** contract was received in Yuma with great enthusiasm. The decision of Judge Wilson paves the way for the early construction of the $38,000,000 canal project. The canal will have its intake at the Colorado River just above the present site of the Laguna Dam and will be known as the Imperial Dam. Here the desilting works will also be constructed. The canal itself will follow a course along the foothills to Pilot Knob where water for Mexico will be diverted. The canal will then follow a course toward the sand dunnes and thence across the desert to a point near the International line and into the Imperial Valley. Most of the operations relative to the huge project will be conducted out of Yuma, Arizona. Offices as headquarters for government engineers in charge of canal construction will be located in that city.

President Roosevelt's emergency public works bond issue measure will give Arizona an additional million dollars for highway construction, through the amended program which will raise the figures to $5,575,000, instead of $4,575,000 allotment in the bill as first passed by the House. The increased appropriation results largely from amendments proposed by Senator Carl Hayden who opposed the move of eastern states to reduce the size of appropriations to western mountain states.

Utah Notes

Associated General Contractors, Intermountain Branch, announce the removal of their offices from the Central Building to 224-5 Beason Building, Salt Lake City, Utah.

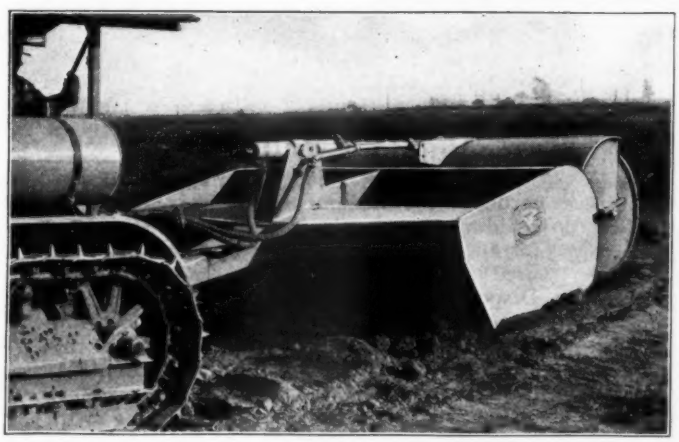
Oregon Notes

Sealed bids will be received at the office of the Bureau of Reclamation, Ontario, Oregon, June 26th for the **construction of earthwork and structures,** North Canal, station 260 to station 513. The work is located near Nyssa and Adrian, Oregon, on the Oregon Short Line Railroad. The principal items and the estimated quantities involved are as follows: 505,500 cubic yards of all classes of open-cut excavation; 15,000 station cubic yards of overhaul; 2600 cubic yards of backfill; 260 cubic yards of concrete in structures; placing 23,000 pounds of reinforcement bars; and placing 2500 pounds of gates and gate hoists.

The above illustration shows **Saxton & Looney's** Bucyrus-Erie 37-B gasoline shovel widening the Pacific highway be-

Cheap Dirt!!

With the Blaw-Knox (Ateco) Hydraulic DIRTMOVER



- *Cheap Dirt*—lower and lower cost, per yard are being obtained on many throughout the country by contractors using the Blaw-Knox (Ateco) Hydraulic DIRTMOVER.
- Yardage costs such as $.0495 per cubic yard, and lower, dependent upon length of haul—are a matter of common record. We would like to tell you about contractors who are making real money out of all kinds of dirt moving jobs.
- Ask about the low cost DIRTMOVER —and the Hidden Power BULLDOZER, or the TAMPING ROLLER.

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Shots From the Firing Line— *Continued*

tween Canemah and Falls Vista. This project which will cost approximately $67,000 is considered a hard one to handle due to the fact that the Southern Pacific and Portland Cement General Electric Company property is directly below and care must be taken to prevent falling rocks doing any damage to the tracks which must be kept clear at all times. It is estimated that approximately 57,000 cubic yards of rock will be moved, same being used for the fill at the south end of the super-highway bridge near Gladstone.

Pacific Coast Notes

By H. L. LIVINGSTON

The Metropolitan Water District of Los Angeles has awarded the following new **tunnel contracts:**

(1) To **Broderick & Gordon,** Denver, Colorado, a contract for $1,435,614 for 2.79 miles east portion of the West Eagle Mountain Tunnel.

(2) To **L. E. Dixon Company and Bent Bros.,** Los Angeles, contract for $1,025,898 for 2.01 miles west portion of the West Eagle Mountain Tunnel.

(3) To **Hunkin-Conkey Construction Company,** Cleveland, Ohio, contract for $814,952 for 1.82 miles of the Hayfield No. 1 Tunnel.

(4) To **J. N. Gordon and Floyd Shofner,** Los Angeles, a contract for $471,889 for 1.02 miles Hayfield No. 2 Tunnel.

(5) To **Morrison-Knudsen Co.,** Los Angeles, a contract for $575,685 for 1.11 miles Mecca Pass No. 1, 2 and 3 Tunnels.

At the bidding June 12th low bidders on the **four additional tunnels** at the East end of the aqueduct were by the **Walsh Construction Company** of Davenport and the **West Construction Company** of Boston. The former bid $4,357,780 on the 1.07 miles of Colorado River tunnel, the 2.32 miles of Copper Basin Tunnel, and the 6.09 miles of Whipple Mountain tunnel. West Construction Company bid $1,051,638 for the 1.9 miles of Whitewater Tunnel. The letting of these projects will dispose of the entire 83.7 miles of tunnel system for the aqueduct excepting for the East Eagle Mountain tunnel on which bids were rejected. The Metropolitan Water District is handling construction on 26 miles of tunnel in the Coachella Ranges through their own organization.

The California Division of Highways at Sacramento, California, has awarded a contract in the amount of $32,040 to **N. N. Ball,** of Berkeley, California, and **Willard Biasotti & Lovotti** of Stockton, California, for 0.9 mile of grading and concrete paving on the new Merced River bridge approaches in Merced County. About 30,000 yards of excavation are involved in this contract.

On June 2, J. L. Burkholder was appointed Assistant General Manager of the Metropolitan Water District of Southern California by the Board of Directors upon recommendation of F. E. Weymouth, General Manager and Chief Engineer. Mr. Burkholder, who has been Division Superintendent for the District, in charge of Coachella Tunnel construction, was formerly Chief Engineer of the Middle Rio Grande Conservancy District, Albuquerque, New Mexico.

Preliminary work has been authorized by directors of the Los Angeles County Sanitation District in connection with the proposed **White Point Outfall Sewer** extending from the present disposal plant at Figueroa and Western, through Palos Verdes hills to White Point and 5,000 feet out into the ocean. The work authorized so far has been a contract in the amount of $6,000 for diamond drilling along the line of the proposed tunnel section and a $10,000 allowance to the chief engineer for a survey of the ocean bottom and such drilling as may be necessary. The tunnel section referred to consists of 38,800 feet of 8-foot diameter horseshoe section concrete lined tunnel. The estimated total cost of this outfall sewer will be $2,750,000.

George Jones, County Road Commissioner of Los Angeles, has asked for an appropriation of $900,000 from the Los Angeles County Supervisor **to im-**

Shots from the Firing Line
(Concluded on page 296

Pushes, pulls, works with sky hooks, chain, pipe —thousands of uses. Built to last a lifetime.

CUT *repair* COSTS!

ON EVERY JOB where a tight hold, a steady push or a heavy lift is needed, a Beco Jack will do it better. You cannot in one day, visualize all of the jobs the Beco Jack can do handily.

Write for complete information—no obligation.

BUCYRUS-ERIE COMPANY
Specialty Department
SOUTH MILWAUKEE WISCONSIN

Building a 40 Foot Fill

Raising this 40 foot fill on a railroad construction job, without the use of jacks—or the building of a trestle, is just one of the many instances where the Track Machine has been used at a great saving in time and labor. Disposing of overburden at quarries and mines, or any similar job where a track gang is maintained for shifting and raising, this machine and a few men will do the job quickly and soon pay for itself out of expense ordinarily required for men working with bars and jacks.

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THE NORDBERG PATENTED
TRACK SHIFTER

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Not in the Contract

Burglar—"Don't be alarmed leddy. I shan't touch yer—all I want is yer money."

Old Maid—"Oh go away! You are just like all the other horrid men!"

Here lies a young salesman named
Phipps,
Who married on one of his trips,
A widow named Block,
Then died of the shock,
When he saw there were six little
chips.

Lady: "This milk isn't good any more."

Milkman: "I know it, lady. Our cows haven't been contented since they tore down the tobacco sign with the handsome bull on it."

Mr. Justwed: "What did you do to this meat? It has such a peculiar taste."

Mrs. Justwed: "Oh, nothing. It did get a little burnt, but I fixed that—I applied Unguentine right away."

Contractor Bronson died very suddenly and an important business letter was left unmailed.

Before sending it off, his secretary, who had a passion for explanatory detail, added the following below Mr. Bronson's signature:

"Since writing the above, I have died."

High Bidder: "Why don't you get a car for your wife?"

Low: "I can't find anybody willing to exchange his car for my wife."

Foreman (on excavation job): "Do you think you are really fit for hard labor?"

Applicant: "Well, some of the best judges in the country have thought so!"

Poor old Hiram. He went up to New York determined to make his fortune pulling some skin games on innocent strangers. However, the first fellow he tried to sell the Brooklyn Bridge to, turned out to be the owner of the darn thing, and if Hi hadn't paid him ten dollars to keep quiet the man would have had him arrested.

Magistrate (to woman involved in matrimonial dispute—"Did you and your husband quarrel on Friday night?"

Wife—"And the next day pay day! Certainly not."

BY CEDERBLOM, COURTESY ARIZONA HIGHWAYS

The young man who studied engineering by correspondence to get an easy job.

A contractor was doing a small road grading job through the grounds of a public sanitarium. A patient saluted him.

"You're a contractor, ain't yuh?"

The contractor said that he was.

"I used to be a contractor once," said the guest of the state.

"Did you?"

"Yes. Say, stranger, did yuh ever try bein' crazy?"

The contractor never had, and started to move on.

"Well, you oughta try it," was the ex-contractor's parting shot. "It beats contractin' all hollow."

John, who was attending a bidding in a distant city, received a telegram from his wife reading, "John, remember you are a married man."

His answer read:

"Telegram received too late."

Tom: "I thought your secretary was blonde?"

Jerry: "She was, but she's gone off the gold standard."

A writer states: "Billiards require the greatest finesse and most expert touch of any human endeavor."

The writer, obviously, hadn't tried to borrow money from a bank lately.

John rushed round looking for his coat. "What do you want it for, dear?" asked the wife.

"That fellow Smith across the road has just telephoned to ask if I can lend him a corkscrew."

"Well, what do you want your coat for? Surely there's no need to go out? You can send Mary with it."

John turned upon her more in sorrow than in anger.

"My dear," he said, "your last remarks sum up the whole reason why women cannot lead armies, control nations or take anything but a subordinate part in the affairs of the world."

A red-haired boy applied for a job as cookee at a road camp.

"How much will you give me?"

"Three dollars a week; but what can you do to make yourself useful around a camp kitchen?"

"Anything."

"Well, be specific. Can you dress a chicken?"

"Not on $3 a week," the boy came back promptly.

A contractor's two small sons were hunting in the woods, and one of them stopped and picked up a chestnut burr.

"Tommy!" he called excitedly. "Come here. I've found a porcupine egg!"

Mike's own description of his easy job: "I've nothing to do at all. I just carries a load of bricks up the ladder to the bricklayer, and he does all the work."

Proud Suburban Lady: "You know, my husband plays the organ."

Contractor's Wife: "Well, if things don't improve, my husband will have to get one, too."

Mine Superintendent's Wife: "Mary, when you wait at table tonight for my guests, please don't wear any jewelry."

Maid: "I have nothing valuable, ma'am, but thank you for the warning."

Cop: "Madam, didn't you see me hold up my hand?"

Lady Driver: "I did not."

Cop: "Didn't you hear me blow my whistle?"

Lady Driver: "I didn't."

Cop: "Well, I guess I might as well go home. I don't seem to be doing much good here."

Cop (looking at man reposing in gutter): "Drunk?"

Man (insulted): "Certainly not; I'm just holding this parking space for a friend."

EXCAVATING ENGINEER *Bargain Counter*

★ ★ ★ **AS ADDITIONAL SERVICE to the industry of excavation, Excavating Engineer lists below a large number of equipment bargains available at the present time. Some of this equipment is new, some has been rebuilt by the manufacturer and some is just plain used. We believe that each item represents a bargain for the man who has use for that particular type of equipment. Send us a postal card or letter, giving reference number and we will pass the inquiry right on to the owner.** ***Address all inquiries to Bargain Counter,*** **Excavating Engineer, South Milwaukee, Wisconsin.** ***Good Values—Very Low Prices***

SHOVELS-CRANES DRAGLINES

P&H MODEL 208—45′ BOOM DRAGLINE Cats—15½′ long, 9′ wide, 22″ Treads. 100 HP. Waukesha High Alt. Engine. SCD-1.

BUCYRUS-ERIE REBUILT TYPE B HIGH LIFT STEAM SHOVEL. Excellent condition. Clamshell equipment available. SCD-2.

AMERICAN 1 CU. YD. GASOLINE SHOVEL. Motor overhauled 1932. Good value. SCD-3.

P&H MODEL 600—40′ BOOM CLAMSHELL. Waukesha 75 HP. Engine. New 1929. Dragline and Shovel equipment also available. SCD-4.

ORTON ⅝ YD. GASOLINE SHOVEL. New 1928. Make an offer. SCD-5.

BUCYRUS-ERIE TYPE B-2 HIGH LIFT STEAM SHOVEL. Cat Mounting. Excellent condition. Very low price. SCD-6.

P&H MODEL 600. New 1929. 20′ Boom, 14′3″ Dipper Handle, 1 cu. yd. Dipper. Waukesha 75 HP. Engine. Dragline and Clam Shell Equipment also available. SCD-7.

BUCYRUS-ERIE MODEL 30-B DIESEL—25′9″ Boom, 14′ Dipper Handle, 1 yd. Dipper. SCD-9.

BAY CITY TRACTOR TYPE—CHAIN CROWD —⅝ YD. SHOVEL. Cat Mounted. McCormick-Deering Power Unit. Excellent condition. SCD-10.

OSGOOD "CONQUEROR" GAS—1¼ CU. YD. SHOVEL—Brand New LeRoi Engine. Clamshell Equipment also available. SCD-18

MONIGHAN MODEL 1-W, WALKER — 60′ Boom Dragline, 1¼ cu. yd. Page Bucket. Good condition. SCD-13.

P&H MODEL 600—40′ BOOM DRAGLINE. Waukesha 75 HP. Engine. New 1929. Shovel and Clamshell Equipment also available. SCD-14.

BAY CITY TRACTOR TYPE CLAMSHELL. NEW 1928. Excellent condition. Shovel Equipment also available. SCD-15.

BUCYRUS-ERIE SLIGHTLY USED-LOAD-MASTER TRACTOR CRANE—14′ Boom—Rubber tired wheels—Rated lifting capacity 4500 lbs. McCormick-Deering Power Unit—New Machine Guarantee. SCD-17

OSGOOD "CONQUEROR" GAS—40′ BOOM CLAMSHELL—Brand New LeRoi Engine. 1¼ cu. yd. Shovel Equipment also available. SCD-19

CAT MOUNTINGS

Give that Old Wheel Machine New Life

1 REBUILT SPUR GEAR CAT MOUNTING—Interchangeable with Type B or Type B-2 Bucyrus-Erie traction wheel or cat mounting. CM-1.

BOILERS

BRAND NEW

Will Make That Old Shovel Work Like New.

Can Also Be Used for Miscellaneous Service.

Vertical Type

9 **36″x82½″**—26 H.P.—142 lb. Working Pressure. Mass. Std. Will fit Type A. B-1.

4 **42″x88″**—35 H.P.—144 lb. Working Pressure. Mass. Std. Will fit Type B Shovel. B-2.

1 **44½″x88½″** fitted with extended fire box for burning wood. Can be used for coal or coke. 37 H.P.—144 lb. Working Pressure. ASME Std. Can be installed on Type B Shovel. B-3.

1 **44½″x88½″**—37 H.P.—145 lb. Working Pressure. Canadian Std. Will fit Type B Machine. B-4.

2 **44½″x88½″**—37 H.P.—147 lb. Working Pressure. Mass. Std. Will fit any Type B B-5.

1 **46½″x88½″**—37 H.P. 150 lb. Working Pressure. Special Wood Burning. Mass. Std. Will fit any B-2 or B-3 Machine. B-7.

2 **46½″x88½″**—37 H.P.—150 lb. Working Pressure. Mass. Std. Will fit B-2 or B-3 B-8.

3 **46½″x110″**—40 H.P.—155 lb. Working Pressure. Special Wood Burning Fire Box. ASME Std. Will fit any B-2 or B-3 B-9.

1 **48″x7′10″**—52 H.P.—150 lb. Working Pressure. Mass. Std. Will fit any 31-B B-10.

1 **54″x100″**—41 H.P.—125 lb. Working Pressure. ASME Std. Will fit B-2 or B-3. B-11.

2 **58″x7′9″**—70 H.P.—150 lb. Working Pressure. Mass. Std. Will fit 42-B Machine. B-12.

Locomotive Type

3 **44″x17′**—75 H.P.—125 lb. Working Pressure. ASME Std. Will fit Model 68-C. B-13.

1 **44″x18′**—88 H.P.—125 lb. Working Pressure. ASME Std. Will fit Model 70-C B-14.

1 **54″x9′7″**—70 H.P.—125 lb. Working Pressure. Canadian Std. Will fit Model 50-B Machine. B-15.

2 **54″x11′3″**—92 H.P.—125 lb. Working Pressure. ASME and Mass. Std. Will fit Model 50-B Machine. B-16.

1 **54″x18′**—127 H.P.—140 lb. Working Pressure. ASME Std. Will fit Model 103-C B-17.

ENGINES

Designed especially for application to Excavating or similar Equipment. Can be used for stationary or semi-stationary service.

Diesel

12 **BRAND NEW NON-REVERSIBLE ATLAS DIESEL ENGINES**—4-cylinder, 7″ bore x 8½″ stroke, 75 HP at 600 RPM, 4 cycle, Vertical—valve in head type. Includes radiator, fan, auxiliary air compressor, tank and fittings, fuel tank with pipe and fittings. Also mounted on structural base for portable use. DE-1.

2 **BRAND NEW NON-REVERSIBLE ATLAS DIESEL ENGINES**—5-cylinder, 9″ bore x 10½″ stroke, 150 HP at 450 RPM, 4 cycle, Vertical—valve in head type. Dust proof, Oil tight crank case and forced lubricating system. Full equipment. Also auxiliary air starting equipment. DE-2.

1 **SLIGHTLY USED NON-REVERSIBLE ATLAS DIESEL ENGINE**—3-cylinder, 6½″ bore x 8½″ stroke, 45 HP at 600 RPM, 4 cycle, Vertical—valve in head type, Dust proof. Enclosed oil tight crank case and forced lubricating system. Excellent operating condition. Will demonstrate. DE-3

1 **REBUILT-BRAND NEW CYLINDERS—120 HP 14″x17″ TWO CYLINDER FAIRBANKS-MORSE-DIESEL ENGINE, SPEED 257 R.P.M.**—Fuel Tank, Air Tank, Water circulating Pump, Four cylinder starting Engine belted to Compressor and Hand Pump for filling fuel tank included. DE-4.

4 **BRAND NEW NON-REVERSIBLE ATLAS DIESEL ENGINES**—3-cylinder, 6″ bore x 8″ stroke, 45 HP. at 650 RPM. DE-5

3 **BRAND NEW NON-REVERSIBLE ATLAS DIESEL ENGINES**—4-cylinder, 6″ bore x 8″ stroke, 60 HP. at 650 RPM. DE-6

Steam

1 **12½″x16″** link reversing type for Railroad Shovel. ME-1.

2 **4½″x5″** reversible—20.8 HP at 400 RPM. 100 lb. Pressure. ME-2.

1 **4¾″x5″** reversible—23.2 HP at 400 RPM. 100 lb. Pressure. ME-3.

2 **5″x5″** reversible—25.6 HP at 400 RPM. 100 lb. Pressure. ME-4.

1 **"LITTLE TUGGER" INGERSOLL RAND STEAM HOIST ENGINE No. 1-H-5-2½ H.P.** ME-5.

AIR COMPRESSORS

2 **11″x11″x12″ STEAM DRIVEN LOCOMOTIVE TYPE,** Westinghouse air comoressors with fittings. Brand New. AC-1.

2 **11″x11″x12″ STEAM DRIVEN LOCOMOTIVE TYPE,** Westinghouse air compressors with fittings. Used. Make offer. AC-2.

COMPLETE FRONT END EQUIPMENT

Shovel Equipment

½ CU. YD. DIPPER—20′ BOOM—13′ DIPPER HANDLE—Rope Crowd Shovel Equipment suitable for Model 1020. **Brand New.** SE-7.

⅝ CU. YD. DIPPER—22′ BOOM—15′ DIPPER HANDLE—Extra High Lift Rope Crowd Shovel Equipment suitable for Model 21-B. Brand New. SE-21

¾ CU. YD. DIPPER—23′ BOOM—15′ DIPPER HANDLE—Extra High Lift Rope Crowd Shovel Equipment suitable for Models 1030 or 1035. **Brand New.** SE-2.

¾ CU. YD. DIPPER—20′6″ BOOM—14′ DIPPER HANDLE—Rope Crowd Shovel Equipment suitable for Model 21-B. **Brand New.** SE-8.

¾ CU. YD. DIPPER—23′ BOOM and ENGINE—12′6″ DIPPER HANDLE—Shovel Equipment suitable for 20-B Steam. **Brand New.** SE-15.

¾ CU. YD. DIPPER—26′ BOOM and ENGINE—17′ DIPPER HANDLE—High Lift Shovel Equipment suitable for 30-B Steam. **Brand New.** SE-16.

⅞ CU. YD. DIPPER—25′9″ BOOM—14′ DIPPER HANDLE—Shovel Equipment suitable for 30-B Diesel. **Brand New.** SE-17.

⅞ CU. YD. DIPPER—23′ BOOM—15′ DIPPER HANDLE—High Lift Rope Crowd Shovel Equipment Complete suitable for Model 1030 or 1035. Rebuilt—New Equipment Guarantee. SE-22

⅞ CU. YD. DIPPER—21′9″ BOOM and ENGINE—15′ DIPPER HANDLE—High Lift Shovel Equipment. Suitable for 31-B Steam. **Brand New.** SE-18.

⅞ CU. YD. DIPPER—24′ BOOM—16′ DIPPER HANDLE—Rope Crowd Shovel Equipment suitable for Model 32-B. **Brand New.** SE-9.

1 CU. YD. DIPPER—26′ BOOM—15′ DIPPER HANDLE—Rope Crowd Shovel Equipment suitable for Model D-2. **Brand New.** SE-3.

1¼ CU. YD. DIPPER—25′ BOOM—17′ DIPPER HANDLE—Slightly Used Rope Crowd High Lift Shovel Equipment suitable for Model 37-B. **New Machine Guarantee.** SE-5.

1½ CU. YD. DIPPER—23′6″ BOOM—15′ DIPPER HANDLE—Slightly Used Rope Crowd Shovel Equipment suitable for Model 37-B. **New Machine Guarantee.** SE-6.

1½ CU. YD. DIPPER—27′ BOOM—17′ DIPPER HANDLE—High Lift Rope Crowd Shovel Equipment suitable for Model 43-B. **Brand New.** SE-12.

1½ CU. YD. DIPPER—30′ BOOM and ENGINE—19′ DIPPER HANDLE—High Lift Shovel Equipment suitable for 50-B Steam. **Brand New.** SE-19.

1¾ CU. YD. DIPPER—24′ BOOM—15′ DIPPER HANDLE—Rope Crowd Shovel Equipment suitable for Model 43-B. **Brand New.** SE-13.

1¾ CU. YD. DIPPER—32′6″ BOOM—17′6″ DIPPER HANDLE—High Lift Rope Crowd Shovel Equipment suitable for 50-B Diesel. **Brand New.** SE-20.

BRAND NEW Ropes included with each of above Shovel Equipments.

Clamshell Equipment

30′ BOOM COMPLETE EQUIPMENT INCLUDING ROPES. Suitable for Models 1020 or 1025. **Brand New.** CS-1.

35′ BOOM COMPLETE EQUIPMENT INCLUDING ROPES. Suitable for Models 1020, 1025 or 21-B. **Brand New.** CS-2.

40′ BOX BOOM CLAMSHELL EQUIPMENT INCLUDING ROPES. Suitable for Model D-2. **Brand New.** CS-3.

Lifting Crane Equipment

35′ BOOM AND ROPES, and 10 ton Dobie Block. Suitable for Models 1020 or 1025. **Brand New.** LC-1.

30′ BOOM AND ROPES, including one 10 ton Dobie Block. Suitable for Models 1020, 1025 or 21B. **Brand New.** LC-2.

Dragline Equipment

35′ BOOM, FAIRLEAD AND ROPES, but not including bucket. For use on Models 1020, 1025 and 21B. DL-1.

35′ CHANNEL BOOM, FAIRLEAD AND ROPES but not including bucket. For use on Model D-2. DL-2.

40′ CHANNEL BOOM, FAIRLEAD AND ROPES, but not including bucket. For use on Model D-2. DL-3.

40′ BOX BOOM, FAIRLEAD AND ROPES, but not including bucket. For use on Model D-2. DL-4.

45′ BOX BOOM, FAIRLEAD AND ROPES, but not including bucket. For use on Model D-2. DL-5.

40′ CHANNEL BOOM, FAIRLEAD AND ROPES, but not including bucket. For Model E-2. **Brand New.** DL-6.

45′ CHANNEL BOOM, FAIRLEAD AND ROPES, but not including bucket. For Model E-2. **Brand New.** DL-7.

40′ CHANNEL BOOM, FAIRLEAD AND ROPES, but not including bucket. For Model 30-B Diesel. **Brand New.** DL-8.

45′ CHANNEL BOOM, FAIRLEAD AND ROPES, but not including bucket. For Model 30-B Diesel. **Brand New.** DL-9.

BRAND NEW Ropes included with each of above Dragline Equipments.

All of above equipment is BRAND NEW and of BUCYRUS-ERIE manufacture.

Trench Digging Equipment

½ CU. YD.—30″ WIDE SOLID TYPE DIPPER, 18′ Boom, Dipper Handle and all auxiliary equipment for application to **Model 1020.** Will dig to maximum depth of 16′. DS-1.

¾ CU. YD.—36″ WIDE SOLID TYPE DIPPER, 18′ Boom, Dipper Handle and all auxiliary equipment for application to **21-B.** Will dig to maximum depth of 16′. DS-2.

¾ CU. YD.—36″ WIDE SOLID TYPE DIPPER, 21′ Boom, and all auxiliary equipment for application to **Model 1030.** Will dig to maximum depth of 18′. DS-3.

1 CU. YD.—42½″ WIDE SOLID TYPE DIPPER, 21′ Boom, and all auxiliary equipment for application to **Model 32-B.** Will dig to maximum depth of 18′. DS-4.

1 CU. YD.—42½″ WIDE SOLID TYPE DIPPER, 24′ Boom, and all auxiliary equipment for application to **GA-2 Shovel.** Will dig to maximum depth of 22′. DS-5.

1 CU. YD.—42½″ WIDE SOLID TYPE DIPPER, 24′ Boom, and all auxiliary equipment for application to GA--2 CLAMSHELL OR DRAGLINE. Will dig to maximum depth of 22′. DS-8.

1 CU. YD.—42½″ WIDE SOLID TYPE DIPPER, 24′ Boom, and all necessary auxiliary equipment for application to GA-3 SHOVEL. Will dig to maximum depth of 22′. DS-6.

1 CU. YD.—42½″ WIDE SOLID TYPE DIPPER, 24′ Boom, and all auxiliary equipment for application to GA-3 CLAMSHELL OR DRAGLINE. Will dig to maximum depth of 22′. DS-9.

All of the above equipment is BRAND NEW and of Bucyrus-Erie manufacture.

BRAND NEW PAGE, two dippers each ⅝ cu. yd., one 38″ wide over cutters, the other 49½″ wide over cutters. 17′1½″ Boom and all necessary auxiliary equipment. Will fit Bucyrus-Erie 1030, 1035 or 32-B. DS-7.

BRAND NEW Ropes included with each of above Trench Digging Equipments.

Dippers—Small Machines

2 ⅝ CU. YD.—Plate.—Will fit 20-B Steam or Gas. Brand New. D-12

1 2/3 CU. YD.—Plate front.—Will fit 14-B. Brand New. D-13

1 ¾ CU. YD.—Rock type.—Will fit 30-B Gas or Diesel. Brand New. D-14

1 ¾ CU. YD.—Rock Type.—Will fit 20-B Steam or Gas. Brand New. D-15

4 ¾ CU. YD.—Plate front.—Will fit 1030 or 1035. Brand New. D-16

1 ¾ CU. YD.—Cast Front Inserted Tooth. Will fit 1030 or 1035. Brand New. D-17

2 ⅞ CU. YD.—Plate front.—Will fit 1030 or 1035. Brand New. D-18

2 ⅞ CU. YD.—Cast Front Inserted Tooth. Will fit B-B2-B3-GA2-GA3. Brand New. D-19

1 ⅞ CU. YD.—Plate Front. Will fit 18-B. Brand New. D-20

1 ⅞ CU. YD.—Rock type. Will fit 31-B. Brand New. D-21

1 1 CU. YD.—Rock type. Will fit D-2 or 31-B. Slightly Used. D-22

1 1 CU. YD.—Cast front inserted tooth. Will fit 41-B or 42-B Steam or Electric. Brand New. D-23

1 1 CU. YD.—Cast Front Inserted Tooth. Will fit GA-2 or GA-3. Brand New. D-24

2 1¼ CU. YD.—Cast Front Inserted Tooth. Will fit GA-2 or GA-3. Brand New. D-25

1 1¼ CU. YD.—Plate front. Will fit E-2, 41B or 42-B. Slightly Used. D-26

2 1¼ CU. YD.—Plate Front. Will fit E-2, 41-B or 42-B. Brand New. D-27

1 1½ CU. YD.—Plate. Will fit E-2, 41-B, 42-B. Brand New. D-28

2 1½ CU. YD.—Manganese Front Inserted Tooth. Will fit E-2, 41-B or 42-B. Slightly Used. D-29

1 1½ CU. YD.—Vanderhoef type with Vanderhoef teeth. Will fit E-2 or 42-B. Slightly Used. D-30

Dippers—Large Machines

1 1½ CU. YD.—Manganese Steel Front—Van Port teeth. Will fit 50-B or 52-B Diesel. Brand New. D-31

1 1¾ CU. YD.—Plate front. Will fit 50-B. Brand New. D-32

1 2¼ CU. YD.—Plate front, coal loading type. Will fit 50-B. Brand New. D-33

1 2½ CU. YD.—Front 2½″ Molybdenum Cast Steel, two part Van Port Reversible Teeth. Can be used on Model 75-B, 68-C, 70-C Machines. **Brand New.** D-1.

2 3 CU. YD.—Front 2½″ Molybdenum Cast Steel, two part Van Port Reversible Teeth. Can be used on Model 100-B, 68-C, 70-C Machines. **Brand New.** D-2.

1 3½ CU. YD.—Front 2¾″ Nickel Chrome Steel, two part Van Port Reversible Teeth. Can be used on Model 88-C, 95-C, Class 180. **Brand New.** D-3.

1 4 CU. YD.—Front 2¾″ Molybdenum Cast Steel, two part Van Port Reversible Teeth. Has seen some service but in good condition. Can be used on Model 100-C, 120-B. D-4.

1 4½ CU. YD.—Lip 2¼″ Manganese Steel, two part Reversible Manganese Teeth. Can be used on Model 88-C, 110-C. **Brand New.** D-5.

3 6 CU. YD. Molybdenum Steel Front, Annealed Cast Steel Back, two part Reversible Van Port Teeth. Can be used on 225-B and 320-B. **Brand New.** D-11.

1 8 CU. YD.—Front Molybdenum Steel, two part Van Port Reversible Teeth. Can be used on Model 320-B. **Slightly Used** but excellent condition. D-6.

Clamshell Buckets

1 3 CU. YD. WILLIAMS "REHANDLER" without teeth or counterweight. **Slightly Used.** CB-6.

Dragline Buckets

1 1¾ CU. YD. OMAHA STANDARD. Rebuilt. DB-7.

1 2 CU. YD. BUCYRUS-ERIE TYPE "U" RED ARCH. Rebuilt. DB-6.

1 2 CU. YD. BUCYRUS-ERIE TYPE "U" RED ARCH. Rebuilt. DB-8.

1 2½ CU. YD. BUCYRUS-ERIE INSERTED TOOTH. Rebuilt. DB-9.

1 2½ CU. YD. OMAHA STANDARD. Rebuilt. DB-10.

ELECTRICAL EQUIPMENT

MOTOR—GENERAL ELECTRIC—3 phase, 25 cycle, 550 volt, 1500 RPM., 90 HP., BRAND NEW. EE-1.

50 KW MOTOR-GENERATOR SET—GENERAL ELECTRIC—consisting of 3 phase, 60 cycle, 440 volt, 1170 RPM., 75 HP., Induction Motor connected to 50 KW, 250 volt, 1200 RPM., Generator, including suitable rheostat and compensator. BRAND NEW. EE-2.

COMPENSATOR—GENERAL ELECTRIC—75 HP., 2200 volt, 3 phase, 25 cycle, manual type. BRAND NEW. EE-3.

TRANSFORMER—GENERAL ELECTRIC—5-KVA. 2200-3810 volt primary, 440-220 volt secondary—3 phase, 60 cycle, with cast iron tank and cover, including specially fastened bushings to prevent oil leakage. BRAND NEW. EE-4.

GENERATOR—WESTINGHOUSE—125 KW, 250 volts, 500 amperes. Direct Current. 440 RPM. Includes two outboard bearings. BRAND NEW. EE-5.

MOTORS (2)—GENERAL ELECTRIC—21.5 H.P. 3 phase, 60 cycle, 440 volt, 900 RPM. Totally enclosed—ball bearing. BRAND NEW. EE-6.

LIGHTING PLANTS

1 1 KW MOON TURBO STEAM GENERATOR for Lighting Plant. 32 Volt. New. LP-1.

1 1 KW MOON TURBO STEAM GENERATOR for lighting Plant. 110 Volt. New. LP-2.

1 1 KW MOON TURBO STEAM GENERATOR for Lighting Plant. 110 Volt. Used. LP-3.

1 1¼ KW DELCO LIGHTING GENERATOR Non-Battery type. 110 Volt. New. LP-4.

Shots From the Firing Line— *Continued*

prove Figueroa Street from Solano to Second Street. This request has been referred to the Road and Bridge Committee.

Granfield, Farrar & Carlin of San Francisco have resumed work on their Government road contract in Yosemite Valley after a shut-down of five months during the winter season. On this contract, they are using a Bucyrus-Erie Gas+Air shovel, which is being operated by Mickey Murphy, one of the best-known operators on the Pacific Coast.

By D. E. BANKER

Booth and Homei, Los Angeles, submitted the low bid of $2.15 per ton for resurfacing and grading on North Canon Drive, Los Angeles, from Santa Monica boulevard to Sunset boulevard. Contract, which involves 216,300 square feet of two-inch asphalt concrete resurfacing, was let by the Beverly Hills city council on April 25.

Southern California Roads Company, Los Angeles, was low bidder on the contract for improving Santa Barbara avenue and other streets in the Crenshaw boulevard and Santa Barbara avenue improvement district, Los Angeles. The cash contract was on a bid of $1,472.88, submitted on April 26 to the Los Angeles board of public works.

Hawaii

By PERRY H. KRAFT

A concurrent resolution requesting Congress to allot Hawaii **$4,000,000 for the construction of Kalihi Tunnel** was adopted by the Territorial legislature.

Schedule of **completion of Kippa bridge** is now June this year, while approaches will not be completed until January or February 1934. A saving of $73,000 a year is assured the motoring public, as a result of the new bridge. 150 men are employed on the project.

When things looked darkest, Governor L. M. Judd announced the **R. F. C. had allowed $87,500** further for relief employment in the Islands. Most of this is being used in clearing roads, building parks and a general cleanup.

Improvement of Kauai Harbor is dependent on local contribution of $200,000. Most interested in project commercially is Alexander and Baldwin. Total improvements would cost $880,000 with a $15,000 maintenance.

The Secretary of War has approved a total of **$95,000 to be spent on improvement of Hawiian waters.** Honolulu will have $36,000; Nawiliwili, $36,000; Hilo, $8,000 and Kahului, $15,000. By the time this is in print, work will have been started. The hopper dredge San Pablo will do the work, coming to Honolulu from San Francisco. This dredge which belongs to the U. S. Engineers, is attached to the San Francisco district, comprising Alaska and Hawaii, in addition to the West Coast. In the various harbors on the West Coast in 1932 the dredge took out 2,755,750 cubic yards of material. It has a total hopper capacity of 525 yards.

Asserting that by the end of June when there will be 1700 graduated from intermediate and high schools, a total of **14,000 will be un-employed;** it has been suggested by Lester Marks, contractor, that a total of $800,000 be appropriated by the legislature in place of the half million, now sure to be passed. Representing 63 contractors, he emphasized that while they did not want to hurt the chances of getting relief funds; the contracting business should not be scheduled for extermination. Also suggested that contractors should get contracts for the larger projects, so that taxpayers could get the maximum amount of work for their money. Practically all relief work is on roads in Hawaii.

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Book Reviews

A 32-page booklet on the Caterpillar power controlled elevating grader has recently been published by the **Caterpillar Tractor Company, Peoria, Illinois.** This booklet, profusely illustrated, is printed in two colors and contains in addition to operating views, parts pictures and diagrams, specifications which will be of value to any reader who is interested in elevating grading equipment.

The Policy Holders Service Bureau of the **Metropolitan Life Insurance Company,** 1 Madison Avenue, New York City, has recently published a new **Index of Economic Reports,** which serves as a guide to a collection of more than 500 reports and articles on current business problems. Executives interested may obtain a copy of this Index free upon application.

POSITIONS WANTED

Positions wanted advertisements will be run under this heading for 5 cents per word, minimum charge $1.00. Advertisements for help wanted free of charge.

Address all box numbers c/o Excavating Engineer at South Milwaukee, Wisconsin

TRANSITMAN — OFFICE WORK

Experienced transitman with mining experience desires transit work, or will work as rodman, chainman or engineer's helper. Have also had experience as timekeeper, and much experience in safety work. Good references. Located Wisconsin, will go anywhere. Box 3513.

STUDENT WANTS SUMMER WORK

College civil engineering student living in Milwaukee, Wisconsin desires practical summer work with small pay on some small job, such as waterboy, flagman, rodman or stake boy for surveying, timekeeper, clerk, etc. in construction or open pit mining operation. Can furnish references. Box 5502.

DRAGLINE OPERATOR

25 years experience on steam draglines on construction work. Prefer operating dragline. Can do own repair work. Reliable references furnished. Present location, Indiana. Box 5701.

SHOVEL, CLAMSHELL, DRAGLINE OPERATOR

19 years experience on steam, gasoline, Diesel and Gas+Air machines on general construction work. Age 40 years and married. Can do own repair work and furnish best of references. Willing to go anywhere. Present location in Michigan. Box 5703.

SHOVEL OPERATOR

Have operated steam, electric and gasoline shovels of practically every make for 20 years on highway and railroad grading, drainage and irrigation and in rock quarry. Can do own repair work and furnish excellent references. Age 45 and married. Willing to go anywhere. Present location New York State. Box 5704.

DRAGLINE OPERATORS WANTED

Single men for positions in Central and South America. Only those with experience in operating Diesel powered draglines need apply. Write fully, stating age and Diesel dragline experience to: United Fruit Company, One Federal Street, Boston, Mass. (Employment Dept.)

SHOVEL OPERATOR

14 years' experience on Bucyrus-Erie, Marion, Thew and Osgood shovels, steam and Gas+Air powered. Experienced in all kinds of shovel work—canal, quarry, railroad, street and highway. Can produce A-1 yardage and do own repair work. Reliable references furnished. Will go anywhere in U.S. on short notice. Present location Ohio. Box 5706.

WANTED

Position as crane, dragline or shovel operator, gas or steam. Have engineer's License and have operated since 1907. Can operate practically all types. Can furnish excellent references. Present location Texas. Box 5705.

MEN WANTED

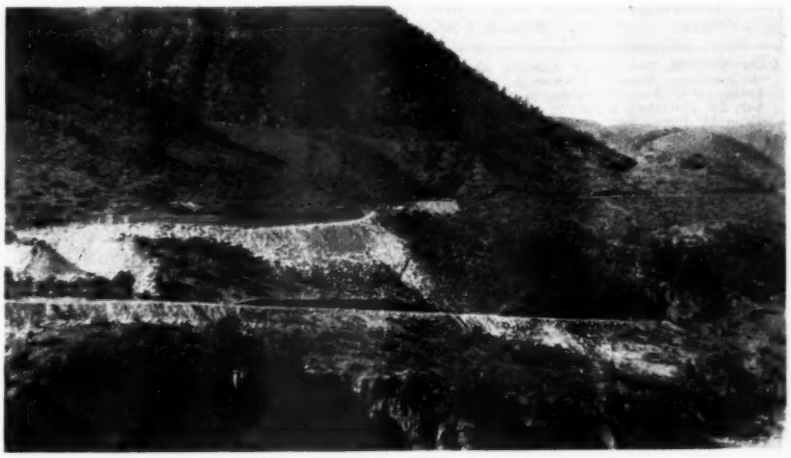
The United States Civil Service Commission will hold competitive examinations for a Senior Highway Construction Supervisor and a Senior Highway Design Engineer in the Bureau of Roads. Entrance salaries are from $4600 to $5400 a year less 15 percent economy deduction and a retirement deduction of 3½ percent. Applications must be filed with the Civil Service Department at Washington no later than July 14th. Competitors will not be required to complete a written examination but will be rated on education and experience. Full information can be obtained from the local secretaries of the U. S. Civil Service Examiners or from the U. S. Civil Service Commission at Washington.

DRAGLINE-SHOVEL OPERATOR

10 years' experience on Bucyrus-Erie, Link Belt, Marion and Northwest machines, steam, gasoline and Diesel powered. Have worked on highway and railroad grading, quarry excavation and drainage irrigation. Willing to go anywhere in U. S. A. Also have 2 years' machine shop experience. Can do own repairing and furnish A-1 references. Present location Florida. Box 5702.

Cutting Grade Through Blue Granite of Arizona's White Mountains

(Continued from Page 267)



Three "legs" of the section may be seen in this photo. (Note the steepness of the heavily timbered mountain.) It was up and down slopes like this one that the 43-B made history for the Bucyrus-Erie Company on its spectacular trip from San Carlos to the job.

super-elevated, the motorist can negotiate them at a rapid rate of speed with perfect safety. The maximum super-elevation is three and one-half feet, and the maximum grade is six per cent.

The finishing was handled with Caterpillars, three Adams leaning wheel blades and a LeTourneau bulldozer. The first seven miles of the job was surfaced with an exceptionally fine quality of disintergrated granite, the balance was self-surfacing.

The Globe-Showlow Highway is a Federal Aid project and its construction is being handled through the Arizona Highway Department of which T. S. O'Connell is chief engineer, S. R. Perkins, district engineer, A. F. Rath, resident engineer, and Frank Flitner, representative of the Bureau of Public Roads.

FOR SALE

RATES:	First insertion rate per column inch	Repeat insertions (no change in copy) rate per column inch
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Over 3 and up to 7 inches	4.25	3.75
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Address all box numbers c/o Excavating Engineer at South Milwaukee, Wisconsin

Small Shovels
Under 2 Yards

BUCYRUS-ERIE TYPE "GA-2" GAS+AIR SHOVEL, shop number 4117, mounted on spur gear drive caterpillar trucks, and equipped with a 24-foot boom; 18-foot, 4-inch dipper handle; 1-cubic-yard manganese cast front socket inserted tooth dipper; power boom hoist; air self-starter, and all equipment and appurtenances in accordance with the specifications of Bucyrus-Erie Company, f.o.b. cars shipping point Virginia. Box 126-SS.

BUCYRUS-ERIE REBUILT DIESEL combination 1½-cubic-yard rope crowd shovel and 50-foot boom dragline. Atlas Diesel engine. Used very little. New machine guarantee. Box 392-SS.

MARION MODEL 21 COMBINATION HIGH LIFT STEAM SHOVEL, ¾-cubic-yard manganese steel dipper, 15-foot dipper handle, 20-foot shovel boom. Also includes 40-foot boom crane equipment including two drums. Boiler retubed and machine is in excellent operating condition. Location about 15 miles from Baltimore, Maryland. Price for immediate acceptance, subject to prior sale, f.o.b. present location—$1,800. Box 396-SS.

P. & H. MODEL 206 Gasoline Combination Shovel and Clamshell machine. Good condition. Located vicinity Chicago. Box 336-SS.

20-B BUCYRUS-ERIE STEAM SHOVEL, serial number 4000; caterpillar mounted; 18-foot boom, 12-foot 6-inch dipper handle, 1-yard dipper; shipped new in 1923; located western Missouri. Bargain. Box 241-SS.

THEW "O" ¾-cubic-yard gas shovel rebuilt 1931 and mounted on new center drive "cat". Box 343-SS.

CHEAP!

Two 20-B Bucyrus steam shovels. Located Aurora, Illinois. Price each $1500.

30-B Bucyrus steam shovel. Located Charleston, Mississippi. Price $1500. Box 303-SS.

MARION MODEL 32, shop No. 5459, mounted on "cats," steam-powered, 1¼-cubic-yard dipper, 24-foot boom, 17-foot 6-inch dipper handles. Box 82-SS.

ONE TYPE "B" BUCYRUS-ERIE STEAM MACHINE, mounted on "cats", ¾-cubic-yard dipper, shop number 2301, 19-foot boom and 16-foot dipper handle. Box 83-SS.

BARGAIN

Bucyrus-Erie Type B number 1952, ¾-yard steam shovel on caterpillar mounting with dragline attachment. Ideal for Construction work or Placer mining. Good condition, located Colorado Springs, Colo. Price right. Box 362-SS.

BRAND NEW PAGE DRAG SHOVEL EQUIPMENT suitable for application to Bucyrus-Erie 1030, 1035, or 32-B machines now in the field, consisting of 17-foot 1½-inch boom, 11-foot dipper handle, and two ¾-cubic-yard dippers: one 38-inches wide over cutters—the other 49½-inches wide over cutters, together with auxiliary A frame and ropes. Priced below cost. Box 381-SS.

BUCYRUS ERIE So. Milwaukee, Wis.

OFFERS FOR SALE OR RENT
FACTORY REBUILT and USED SHOVELS--CRANES--DRAGLINES

Please send me full details on:

- ☐ Osgood 1½ yd. Steam Shovel — Bargain.
- ☐ Bucyrus - Erie — 42-B Steam — 1½ yd. Late Type.
- ☐ P & H 600 1-yd. Shovel-Dragline.
- ☐ Osgood "Conqueror"—Gas Combination Shovel-Clamshell.
- ☐ Bucyrus-Erie 41-B steam 1¼-yd. Shovel. Good condition. Very low price.
- ☐ Monighan Dragline 60-foot boom. Priced right.

Name.....

Address.....

FOR SALE

Address all box numbers c/o Excavating Engineer at South Milwaukee, Wisconsin

Small Shovels
Under 2 Yards
Continued

USED P&H MODEL 700 gasoline, combination shovel-dragline, shop number 3007, including 1¼-cubic-yard drag scraper bucket. Dragline boom 40-foot plus 10-foot extension, shovel boom 25-foot 10-inches, dipper handle 19-foot 3-inches, dipper 1¼-cubic-yard. Engine Waukesha Type WL 4 cylinder 6¼"x7". Good condition. Some repair parts on hand. Machine located Tilleda, Wisconsin. Box 378-SS.

BUCYRUS-ERIE SLIGHTLY USED ½-CUBIC YARD Rope crowd gasoline shovel. Will demonstrate. Box 282-SS.

BUCYRUS-ERIE EXTRA HIGH LIFT B-2 STEAM SHOVEL, 21-foot 3-inch boom, 18-foot 4-inch dipper handle, ⅞-yard dipper, power boom hoist, single shaft "cat." Located Massachusetts. Good condition. Priced very low. Box 385-SS.

BUCYRUS-ERIE 20-B steam shovel ¾-yard Dipper, $850. Chicago territory. Box 348-SS.

THREE TYPE A BUCYRUS-ERIE STEAM SHOVELS. Good value. $500 each.

FOUR TYPE B BUCYRUS-ERIE STEAM SHOVELS. Good operating condition. $1000 each. Box 328-SS.

ONE 18-B BUCYRUS-ERIE, ⅞-yard dipper on full revolving caterpillars. Box 182-SS.

BUCYRUS-ERIE 42-B STEAM SHOVEL—21' Boom, 15' Dipper Handle, 1½ yd. Vanderhoef Dipper. Lagged Boiler. Boiler Feed Pump. Chain Drive Cat. Good Condition. Box 411-SS.

OSGOOD "CONQUEROR" GAS COMBINATION SHOVEL-CLAMSHELL. Brand New. LeRoi 6-cyl. Engine. Excellent condition. Box 412-SS.

P&H MODEL 700—1¼ YD. Shovel & 40' Boom Dragline including 1 yd. Page "C" Bucket. Waukesha 4-cyl. Engine 6¼"x8". Machine completely overhauled year ago. Good condition. Box 413-SS.

NORTHWEST SHOVEL, model 105, caterpillar mounted, 24-foot boom, 1-cubic-yard dipper, 16-foot dipper handle. In good condition. Price $4,500, f. o. b. Utica, New York. Box 34-SS.

BUCYRUS-ERIE 21-B GAS FRICTION SHOVEL, 18-foot 6-inch boom, 14-foot dipper handle, ¾-yard dipper, chain crowd, single shaft "cat." Wisconsin B-3 4-cyl. 5½x6½-inch engine. Shipped from factory August, 1931. Excellent condition. Will rent. Box 387-SS.

BUCYRUS-ERIE—SLIGHTLY USED 1½ YD. Chain Crowd Shovel, Wisconsin 6 cylinder Gas engine—Excellent condition. Box 402-SS.

BUCYRUS-ERIE—REBUILT 1½ YD. High Lift Model 43-B Shovel—6 cyl. Atlas Diesel engine. 50' boom dragline equipment available —new machine guarantee. Box 403-SS.

BUCYRUS-ERIE—PRACTICALLY NEW 1¼ YD.—Extra high lift rope crowd-shovel—Atlas Diesel engine. Extra wide cat. Kohler light plant. Dragline equipment available. New machine guarantee. Box 404-SS

BUCYRUS-ERIE—PRACTICALLY NEW 1½ YD. Extra high lift Rope Crowd Shovel—Atlas Diesel engine. Extra wide Cat. Kohler light plant. Dragline equipment available. New machine guarantee. Box 405-SS.

REBUILT GA-2 BUCYRUS-ERIE SHOVEL mounted on single shaft caterpillar, 1¼-cubic yard inserted tooth dipper, 22-foot 6-inch boom, 16-foot dipper handle, starter. Carries guarantee of new machine. Box 43-SS.

Lorain 75-B shovel purchased new February, 1932. Worked only six months—just like new. Located in northern New York State. Box 414-SS

P&H MODEL 204. Shop number above 2200 combination Shovel Clamshell. 19' shovel boom, 14' 6" dipper handles, ½ cubic yard dipper, 35' clamshell boom, ½ cubic yard Owens Type M digger type bucket. Both front end equipments less than one year old. Excellent condition. Box 284-SS.

BYERS BEARCAT, Model 27, gasoline ½-cubic-yard Skimmer scoop, crane-clamshell and drag shovel with front opening dipper. Engine—4-cylinder, 4"x5" Hercules Model OX. Machine new July 1928. Excellent condition. Box 293-SS.

TYPE B BUCYRUS-ERIE COMBINATION HIGH LIFT STEAM SHOVEL, 19-foot 8-inch boom, 16-foot dipper handle, ¾-cubic yard dipper, power boom hoist and 36-foot boom clamshell equipment complete. Located central Indiana. Price as is, f.o.b. present location $2,000. Box 311-SS.

20-B BUCYRUS-ERIE DIESEL SHOVEL with 36-foot dragline boom. Machine No. 4133.

20-B BUCYRUS-ERIE STEAM SHOVEL with 36-foot dragline boom. Machine No. 4145.

BUCYRUS-ERIE GAS + AIR CRANE with 40-foot boom, ¾-yard Page Dragline bucket. Fairleads and shovel boom, no dipper stick. Machine No. 4347.

TYPE B BUCYRUS-ERIE High Lift Steam shovel. Machine No. 3110.

Box 373-SS.

RECONDITIONED TYPE-A BUCYRUS-ERIE STEAM SHOVEL on caterpillars, ⅝-cubic-yard dipper, 16-foot boom, 13-foot dipper handle, boom hoist, Massachusetts boiler. Machine thoroughly inspected, worn parts replaced. Guaranteed to be in first class operating condition. Will rent or sell. Box 37-SS.

MARION TYPE 32 FULL REVOLVING STEAM SHOVEL, shop number 4639, mounted on four belt caterpillar type mounting and equipped with standard boom and dipper handle and 1¼-cubic-yard dipper. Shipping point western Virginia.

This machine should be an excellent purchase at the price offered, for quarry or slag bank operation. Box 212-SS.

BUCYRUS-ERIE 1030, ¾-cubic-yard rope crowd gasoline shovel. Factory rebuilt and guaranteed. Box 283-SS.

TYPE B-2 BUCYRUS-ERIE STEAM SHOVEL, number 9830, mounted on single shaft caterpillar type mounting. Equipped with 21-foot 3-inch boom, 16-foot dipper handle, ⅞-cubic-yard inserted tooth dipper. Boom hoist and Mass. standard boiler. Located vicinity of Boston. Reasonably priced. Box 345-SS.

BUCYRUS-ERIE brand new 1035 gasoline shovel, rope chain crowd. Also clamshell or dragline equipment. At price you cannot refuse to consider. Box 356-SS.

BUCYRUS-ERIE GAS + AIR Combination high lift shovel and dragline equipment. Chain drive. "Cats." Very good condition. Located vicinity Chicago. Box 337-SS.

P&H MODEL 600—1-yard Gasoline Shovel. Three years old. Excellent condition throughout. Just been thoroughly overhauled. Will sacrifice at bargain to responsible buyer. Located in Wisconsin. Box 363-SS.

BUCYRUS-ERIE 41-B STEAM SHOVEL—21 foot boom, 15 foot dipper handle, 1¼ cu. yd. dipper. Good operating condition. Box 406-SS

Small Draglines
Under 2 Yards

MONIGHAN 60 FOOT BOOM DRAGLINE mounted on 1-W walking device—Waukesha 5¾x8, 4 cyl. gas engine, also 1¼ yd. Page bucket. Good operating condition. Box 408-SD

DRAGLINE—Practically new—Bucyrus-Erie—40'-45' or 50' boom Dragline—6 cyl. Atlas Diesel Engine—Long "Cat" with wide treads. Kohler light plant. 1¾ yd. Omaha bucket—rope crowd shovel equipment available. New machine guarantee. Box 393-SD.

P & H Model 206 B Dragline. Good operating condition. Very favorably priced. Box 390-SD.

BUCYRUS-ERIE GAS+AIR combination high lift dragline and shovel. Chain drive. "Cats." Excellent condition. Located vicinity Chicago. Box 337-SD.

BUCYRUS-ERIE E-2 DIESEL DRAGLINE, caterpillar mounted, 50-foot boom, 1¼-cubic-yard Omaha bucket, Kohler lighting plant. Machine was new in July 1930 and has been used less than 6 months. Box 243-SD.

P&H MODEL 700 USED GASOLINE COMBINATION DRAGLINE-SHOVEL, shop number 3007, 40-foot dragline boom plus 10-foot extension and 1¼-cubic-yard drag scraper bucket. 25-foot 10-inch shovel boom, 19-foot 3-inch handle and 1¼-cubic-yard dipper. Waukesha Type WL 4 cylinder 6¼"x8" engine. Good condition. Some repair parts on hand. Machine located Tilleda, Wisconsin. Box 378-SD.

30-B BUCYRUS-ERIE DIESEL DRAGLINE with 40-foot boom and 1-cubic-yard bucket located in Alabama. Box 91-SD.

P & H MODEL 700 DRAGLINE; number 2894 equipped with a 50-foot boom, light 1½-cubic-yard drag bucket, electric light plant, and powered with 4-cylinder Atlas Diesel engine. Box 189-SD.

P & H DRAGLINE MODEL 700; number 2456 equipped with a 50-foot boom, light 1½-cubic-yard drag bucket, electric light plant, and powered with a Waukesha gasoline engine. Box 190-SD.

FOR SALE OR RENT

One practically new Bucyrus-Erie Model E-2 Dragline, Diesel driven, equipped with 50' boom and 1½-yard Omaha dragline bucket, now located at Shenandoah, Iowa. Box 244-SD.

BUCYRUS-ERIE REBUILT 43-B—50' Boom Dragline—6 cyl. Atlas Diesel Engine. Also 1½ yd. Rope Crowd Shovel Equipment available. New Machine Guarantee. Box 401-SD.

Small Clamshells and Cranes
Under 2 Yards

MARION MODEL 21 HIGH LIFT STEAM CRANE with 40-foot boom equipment including two drums. Also has 20-foot shovel boom, 15-foot dipper handle and ¾-yard manganese steel dipper. Boiler retubed and machine is in excellent operating condition. Located about 15 miles from Baltimore, Maryland. Price for immediate acceptance, subject to prior sale, f.o.b. present location—$1800. Box 396-SCC.

GENERAL 35-FOOT BOOM CLAMSHELL MACHINE and ½-cubic-yard Lakewood bucket. Equipped with four cylinder Buda gasoline engine. Machine new September 1929. Box 335-SCC.

P. & H. MODEL 206 combination clamshell and shovel. Located near Chicago. Good condition. Box 336-SCC.

BUCKEYE CLAMSHELL-CRANE, gasoline driven, caterpillar mounted, equipped with 30-foot boom, ¾-cubic-yard clamshell bucket, fairleads and backfiller scraper. Located in Milwaukee, Wisconsin. Box 371-SCC.

FOR SALE

Address all box numbers c/o Excavating Engineer at South Milwaukee, Wisconsin

Small Clamshells and Cranes
Under 2 Yards
Continued

BUCYRUS-ERIE—SLIGHTLY USED LOAD-MASTER TRACTOR CRANE 14′ BOOM— Rubber tired Wheels—Rated Lifting Capacity 4500 lbs. McCormick Deering Power Unit—New machine guarantee. Box 410-SCC.

LITTLE GIANT CRANE—Gas—Caterpillar Model C. Type B—¾-yd. bucket. Recently overhauled. Now working. $1,500.

BROWNHOIST CRANE — Gas — Cats. Model 2-C Serial No. 8829. 1-yd. bucket. Good working condition. $1,500.

McMYLER MODEL J. LOCOMOTIVE CRANE—35 Ton Steam. 50 and 75-ft. Boom. 1½ or 2-yd. buckets. New boiler and swinging engine recently installed. A real crane for long reach and heavy work. Thoroughly overhauled condition. $4,500.

Box 346-SCC.

Large Shovels and Draglines
2 Yards and Over

CLASS 14 STEAM-DRIVEN DRAGLINE. New 1922. Shop number about 3700. Mounted on skids and rollers. Equipped with 60-foot boom, 2-cubic-yard bucket and electric light plant. Located western Iowa. Priced to sell. Box 395-LSD.

50-B STEAM SHOVEL, Number 3946; equipped with 1½-cubic-yard dipper, 26-foot boom, also 1½-cubic-yard dragline bucket with 50-foot boom caterpillar mounted, equipped for burning oil, located at Texarkana, Ark. Price very reasonable. Box 112-LSD.

BUCYRUS-ERIE SHOP REBUILT 100-B STEAM SHOVEL; shop number 4890; 29-foot 6-in. boom; 20-foot handle; three-cubic-yard dipper. Can be inspected at So. Milwaukee, Wis. Priced to sell. Box 187-LSD.

For Sale or Rent

ONE CLASS-14 STEAM DRAGLINE excavator. Number 3402, 70-foot boom, 2-cubic-yard bucket, caterpillar mounted, equipped for burning gas or oil. Priced very reasonable. Located at Grand Prairie, Texas. Box 110-LSD.

68-C BUCYRUS ELECTRICALLY OPERATED SHOVEL, equipped with 2½-yard manganese front dipper, 3 phase, 60-cycle, 440-volt motors, transformers, cable reel and approximately 1400 feet of cable, all in excellent condition. Reasonable price. Address Box 268-LSD.

6-YD. SHOVEL

BUCYRUS-ERIE 320-B electric shovel, Ward-Leonard control, 3 phase, 60 cycle, 2300 volts, equipped with 6-cubic-yard dipper, 85-foot boom and 58-foot handles. Is in good condition and may be inspected in operation. Reasonably priced. Box 279-LSD.

70-TON STEAM SHOVEL mounted on "cats," caterpillars in good condition. Located near Hazelton, Pa. Box 162-LSD.

50-B STEAM SHOVEL, new March 1927. Shop number about 4950. Has 26-foot boom, 17-foot dipper handle and 2-cubic-yard dipper. Priced to sell. Box 240-LSD.

225-B OWNERS

You may be interested in a partial Bucyrus-Erie 225-B steam shovel located in Kentucky coal fields as a source of spare parts. No reasonable offer refused. Box 211-LSD.

MONIGHAN STEAM DRAGLINE, with 123-foot boom, 3½-cubic-yard bucket, mounted on skids and rollers, located southeastern Iowa. Box 367-LSD.

MONIGHAN DRAGLINE MODEL T, 2-cubic-yard 60-foot boom located near Wichita, Kansas, where it is now working. About seven years old. Has recently been thoroughly overhauled. Box 180-LSD.

DIESEL-ELECTRIC DRAGLINE

Class 14 Diesel electric dragline, Shop Number 5079, new fall of 1927 with 70-foot boom, 2-cubic-yard bucket, and with extra 10-foot extension, western location. Box 296-LSD.

A BARGAIN

All kinds parts for model 300 steam and electric shovels. 6-yard dipper, trucks, dipper sticks, rot. segments, etc., shovels of all sizes.

McCartney Machinery Co.
103 E. Indianola Youngstown, O.

50-B BUCYRUS-ERIE ELECTRIC SHOVEL, equipped with 3-phase A. C. current, 550 volts, 60 cycle and has three motors. New Manganese steel dipper. Located South Carolina. Box 226-LSD.

If You Do Not Find What You Want Listed— Write Us

Excavating Engineer
South Milwaukee Wisconsin

2½-YD. DRAGLINE

Class 220 Page Dragline; 100 H. P. Charter-Horizontal Twin Cylinder engine; 72-foot boom; 2½-cubic-yard Page bucket. Located Northwestern Indiana. Box 200-LSD.

85-C STEAM SHOVEL, on caterpillar mounting, caterpillars in good condition, price $2,500. Located near Hazelton, Pa. Box 163-LSD.

BUCYRUS-ERIE 50-B STEAM SHOVEL, 26-foot boom, 15-foot handles, two-cubic-yard rock dipper. Shop number 9954. Shipped new in 1928. Machine in good operating condition and can be inspected under steam at Eastern Location. Box 397-LSD.

For Sale or Rent

ONE CLASS-14 STEAM DRAGLINE excavator Number 3327 60-foot boom, 2-cubic-yard bucket, caterpillar mounted, equipped for burning gas or oil. Price very reasonable. Located at Turkey Creek, La. Box 111-LSD.

70-C BUCYRUS STEAM SHOVEL on Cats. Complete. In operating condition. Shop number 1712. Also one extra three-yard Manganese dipper. $2,000. Chicago territory. Box 347-LSD.

175-B STEAM SHOVEL No. 4090, equipped with 75-foot boom, 48-foot dipper handle and 3½-cubic-yard dipper. Machine is in very good condition. Oversize boiler. Box 148-LSD.

3-YD. SHOVEL

BUCYRUS 78-C, caterpillar mounted; three-cubic-yard dipper; shop number 3611. Boom rebuilt last year. Equipped with new 103-C boiler and will pass boiler inspection in any state. Shovel is in very good condition and is in operation at present time. Box 326-LSD.

BUCYRUS 320-B STEAM STRIPPING SHOVEL, shop number 4205, new in 1925, used less than four years. Located at Toronto, Ohio. Box 74-LSD.

BUCYRUS 80-B STEAM SHOVEL, shop number about 3800; 2-cubic-yard dipper; 48-foot boom; 32-foot dipper handle. "Cat" mounted. Priced to sell. F.o.b. cars. Box 255-LSD.

TYPE 175-B ELECTRIC, No. 794 equipped with 87′ shovel boom, 48′ dipper handle, 3½-yd. bucket, and dragline equipment including 125′ boom, and 3½-yd. bucket. This machine was recently reconditioned and is in good operating condition. Present location, Connecticut. Box 263-LSD.

BUCYRUS 70-C, Shop number around 1500. Thoroughly overhauled, Good working condition. Eastern location. Box 299-LSD.

CLASS-24 BUCYRUS-ERIE STEAM DRAGLINE, shop number 912; 115-foot boom, 3½-cubic-yard Page bucket. Florida location. Box 73-LSD.

SHOVEL FRONT END for 175-B Bucyrus-Erie 65-foot boom, 47-foot dipper sticks and 3½-cubic-yard dipper. Located in Ohio. Box 10-LSD.

What Do You Bid On a

70-C STEAM SHOVEL located near Marietta, South Carolina, where it completed a railroad job? Bargain as supplementary shovel or as supply of spare parts.

88-C STEAM SHOVEL located in Kansas. Carefully laid up after completing season's work. 3½-yard dipper. Fine condition. Any reasonable offer accepted. Box 52-LSD.

If You Do Not Find What You Want Listed—Write Us

Excavating Engineer
South Milwaukee, Wis.

Miscellaneous Equipment

LOCOMOTIVES

8 **BALDWIN,** 17x24, straight drive standard gauge 45 ton locomotives. 54 inch boilers. Shop numbers from 32,750 to 34,611. Each one has passed State Boiler Inspection yearly. Boilers will stand cold water test of 240 lbs. At present in actual service in Minnesota mine.

2 **BALDWIN** Locomotives, 19x26, standard gauge, 6 wheel switching type, shop numbers 39534 and 39536. Box 152-ME.

TWO BARBER-GREENE LOADING MACHINES. Priced extremely low for quick sale. Box 415-ME.

FOR SALE

Address all box numbers c/o Excavating Engineer at South Milwaukee, Wisconsin

Miscellaneous Equipment
Continued

COMPLETE EQUIPMENT for 2 strip mines, contractors or quarry operations, No. 300 and No. 36 Marion steam shovels, well drills, locomotives, cars, crushers, picking tables, loading booms, cable and button retarders, compressors, motors, transformers, flood and search lights, camp equipment and new repair parts for above. Box 195-ME.

FOR SALE

30—2-yard Western Side Dump Cars—24" Gauge
3—Plymouth Gas Locomotive 24" Gauge
2—Miles 35 lb. Rail
Located in Wisconsin. Box 409-ME

WANTED

Used electric welding outfit, 200 ampere capacity. Must be in good condition. Address Box 379-ME.

4 LA PLANT-CHOATE, 6-yard, all-steel, dump wagons. Equipped with wide iron wheels. Price $200.00 each. Chicago territory. Box 349-ME.

For Sale or Rent

Two 40-ton, 6-wheel switchers. Recently overhauled and rebuilt. Two 50-ton, 6-wheel switchers. In excellent condition. Location Chicago. Box 306-ME.

COMPLETE CONTRACTORS EQUIPMENT

Offered for sale by Southern contractor. Priced to sell.

7—Railroad Type Steam Shovels 2½ to 5 yd.
3—Full Revolving Shovels ¾ yd.
1—Gasoline Clamshell Crane ½ yd.
2—Jordan Spreaders.
2—Locomotives, 26 Ton, American Saddle Tank.
32—12-yd. Western Heavy Duty Dump Cars
3—Camp Cars
1—Flat Car
2—1-bag Gasoline Concrete Mixers
Pumps, Boilers, Jacks and Other Tools

For further particulars, Address Box 138-ME.

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To facilitate *your* making inquiry directly to advertisers regarding catalogs, prices, etc., we provide in the center of this magazine two postal cards which you may address and mail with minimum time and expense involved.

For inquiry on supplies and equipment not advertised another postal card addressed to us is provided. Check plainly *only* those items in which you are interested. *Excavating Engineer* will be pleased to serve you in forwarding your inquiry to manufacturers.

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Bucyrus-Monighan Co.

Works: Chicago, Ill.

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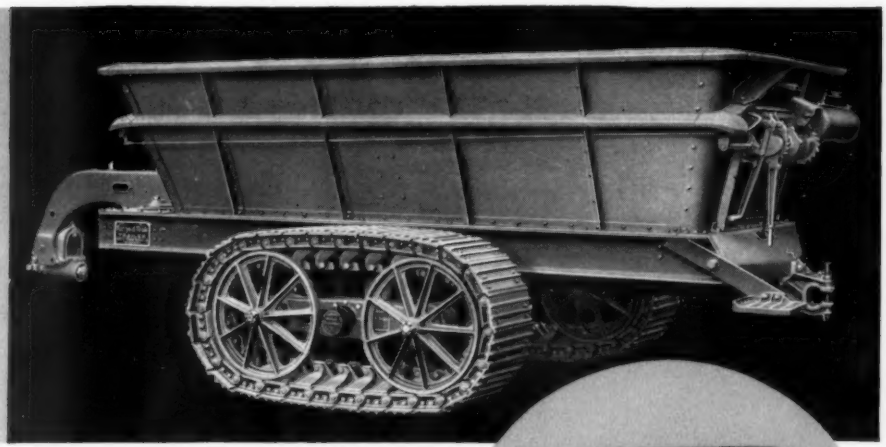
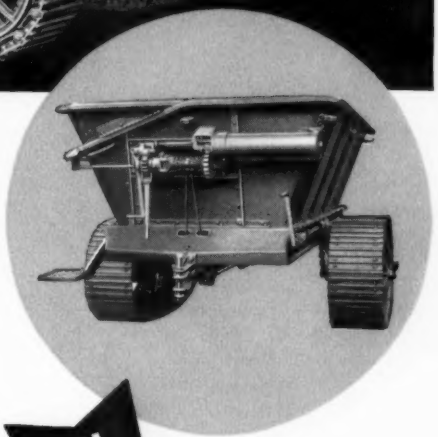
Here's the All-Star ANNOUNCEMENT OF 1933

The NEW ATHEY Forged-Trak 12-YARD Bottom Dump Trailer





NEW dumping flexibility with the Athey Hand-Automatic Dump Mechanism—operating either automatically, semi-automatically, or by hand. That means perfect handling of any material under any operating conditions.

Every feature you have ever wanted in a bottom dump trailer is in this new Athey Forged-Trak! Amazing advantages—exclusive engineering—put it far ahead of anything else on the market today. Athey—always a pioneer—has taken another spectacular forward step in bottom dump trailer construction.

Before you buy any other trailer equipment, investigate the new Athey Forged-Trak Bottom Dump Trailer. You've never seen its equal for light running . . . absolute dependability in every detail . . . utmost efficiency and economy in every operation performed. The new Athey Forged-Trak is THE answer to lowest dirt-moving costs today!

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ATHEY Forged-Trak
REG. TRADE MARK

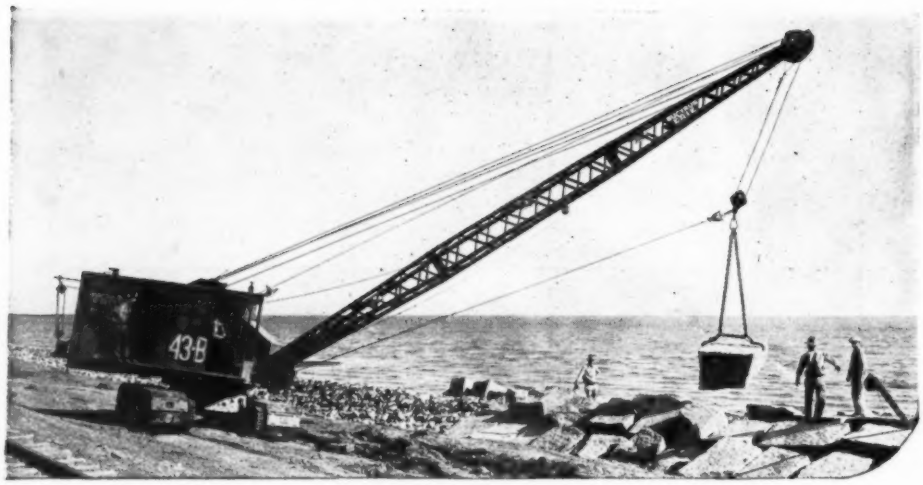
all star

PERFORMANCE
Never Before Equalled!

At least 25 exclusive operating advantages—more than 50 exclusive mechanical features—that's what you get in the new Athey Forged-Trak Bottom Dump Trailer. Here are a few of them . . .

Hand-Automatic Dump Mechanism—new drawbar jack, mounted in rear, mechanically equalizes weight for easy coupling and uncoupling—full cushioned floating drawbar obtained by double-acting spring mounted hitch—spring-mounted cable equalizer—*sealed* track pin bearings—full floating replaceable lock pins in track—positive self-cleaning track assembly—absolutely rigid track structure—extra strength and sturdiness in every part.

Write for Bulletin 509-A giving complete information

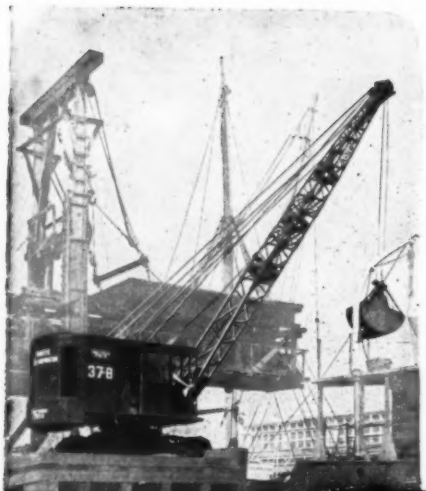


BALANCED VALUE MEANS MOST FOR YOUR MONEY

BALANCED VALUE CUTS COSTS

Controlled SPEED is the only speed that COUNTS

614



The only way to judge a crane or clamshell is by the *output* the machine delivers *on your job*. Paper "crane ratings," swing speeds, line speeds and pulls, are misleading unless considered along with the other vital factors responsible for output.

Satisfactory output demands ample power, with fast swing and hoist, of course. But your machine must also have quick acceleration; smooth, sure braking action; clutches that do not slip or jerk, control levers easily operated and conveniently arranged; complete visibility for the operator. *All* these are needed for safe, accurate, profitable *operating-control* of speed and power.

Bucyrus-Eries have these requirements of controlled speed and profitable output built into them . . . and in addition they offer you properly balanced value in all other factors vital to successful operation. Conservative power rating, speed with accurate control, and ability to spot the bucket or its load right where you want it, are combined with consistent dependability, unequalled operating efficiency, and real upkeep economy, to give you big output at low cost. The reputation, experience and resources of the world's largest manufacturer of excavating equipment are back of each Bucyrus-Erie.

Find out what the new line of modern Bucyrus-Eries can do to cut your costs!

BUCYRUS-ERIE CO., So. Milwaukee, Wis.

All Sizes—½ yd. to 18 yds.
Shovels : Draglines : Dragshovels : Cranes
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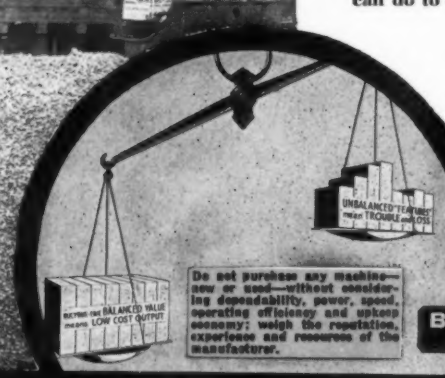
UNBALANCED FEATURES mean TROUBLE and COST
BALANCED VALUE means LOW COST OUTPUT
Do not purchase any machine—new or used—without considering dependability, power, speed, operating efficiency and upkeep economy; weigh the reputation, experience and resources of the manufacturer.

BUCYRUS ERIE

SEE BUCYRUS-ERIE BEFORE YOU BUY!

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